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Exploring perceptions of pressure ulcer risk assessment and pressure ulcer prevention practice among registered nurses in the acute hospital setting

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DECLARATION OF AUTHORSHIP

I am the author of this thesis, and the work described therein was carried out by myself personally.

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i. Tables and Figures

ii. Acknowledgements

Research was not the first thing that came to mind when I started my nurse training. It was never part of the plan. Throughout my nursing career, the impact of research done by other people was apparent all around me: the way I insert catheters changed as a result of reading research about a specific technique; my approach to education changed after reading research about the Socratic method in nurse education; everything I thought I knew about wound care changed when I read about the physiology of wound healing and the experiments that were performed to establish this body of knowledge. When I made the choice to specialise in tissue viability, I thought that better research skills would be a way of helping me to better understand my specialism but also to eventually contribute to its body of knowledge.

It has not been an easy journey, but thanks to the support given to me by a whole host of random people I've met along the way, I finally made it. I feel fortunate to have been in the right place at the right time and having spoken to one such random person at my first wound conference, was introduced to my practice supervisor, Zena Moore. Throughout the whole process, she has been nothing but encouraging, she managed to make insurmountable challenges seem manageable, a testament to how just a few kind words said with a smile can be ultimately reassuring. My academic supervisor, Alan Buckingham, has been there since the start of the programme, always challenging me to push myself further and harder, even when I thought it impossible. He's been that person who stops me for settling for 'just ok' and strive for better (even when I don't achieve it).

I certainly wouldn't be here without the encouragement and camaraderie of my fellow students. Melanie Morgan-Jones showed me how adversity isn't a road-block but challenge to overcome, to everyone who told me I couldn't do something, I looked to Mel for inspiration and did it anyway. Dominique Gummelt has been that little voice in my head all the way through that tells me 'just one step at a time'. When it all seemed too bleak, she was always able to shine a little light in the right direction and help me to move forward.

I've been lucky to have colleagues who have given me much needed kicks up the backside. Juliet Price had a reciprocal agreement for such backside kicking and I think we are both better people for it. All of my colleagues at the Royal Devon and Exeter hospital and at Derriford hospital have been supportive throughout, letting me hide in a corner and rock when I needed to and keeping me in a steady supply of chocolate and coffee (and more chocolate with occasional cake). My new work family in Dawson City, Yukon have

reminded me the importance of balance. They have done some arse-kicking but also some much needed reminders to live life. Nice things are nice, but you have to seek them out and be available to enjoy them when they randomly present themselves. For this reminder to live the life in front of me, I am so grateful.

More than anyone else, my husband Lee, deserves not only thanks but a medal. He has put up with me when I was grouchy. Encouraged me when I was in a slump. Reminded me that even when I felt brainless and incapable that I have something to give. We have had a lot of change during the time this work was undertaken. We built a house. I've moved jobs (a lot some might say). We started a business. We have moved to the far north and west of Canada in search of new adventures, which we found in abundance! Despite all of this change and the upheaval he has experienced with changes in his own work and the impact of changes in our family life, he has been a rock. It was never part of the plan to take this long or cost this much to complete this degree, but he's been there all the way through. While he might think that I need psychiatric intervention at times, he has never discouraged me and has already resigned himself to the realities that despite me saying 'no more', there will probably be another degree, another course, more training, more research, more change.

Finally I want to thank the participants in the study. They have reminded me how wanting to do the right thing and being able to do the right thing sometimes feel worlds apart. Change for the better happens one decision at a time. We have power over our thoughts and actions, in spite of the world around us. If the world around us makes doing the right thing impossible, we have a responsibility not to settle, to always push for better outcomes, to strive for perfection, one choice, one nudge, one conversation at a time.

iii. Abstract

Background: Pressure ulcers are generally considered to be preventable healthcare associated harm yet are prevalent within the patient population receiving NHS care at a rate of approximately 4% or higher. More than 90 risk assessment tools currently exist with the aim of preventing pressure ulcers by identifying those at risk. Despite the wide availability of risk assessment tools, pressure ulcers continue to pose a significant challenge, this raises questions about the role of current risk assessment approaches. This study explores the way that RNs undertake patient risk assessment and how they make decisions about care.

Methodology: A phenomenological approach using a combination of 1 focus group and 9 semi-structured in-depth interviews was conducted. Thematic analysis techniques were used to code and analyse the data.

Results: A total of 14 RNs participated in the study. 3 main themes emerged from this study: Learning and training opportunities influence the way nurses perceive pressure ulcer risk and respond to triggers; Decisions about risk in pressure ulcer care are influenced by conscious and unconscious cognitive processes; Organisational and workforce factors contribute to a theory practice gap. RNs appear heavily influenced by leaning opportunities, both formal and informal in the way they build a mental model of risk and of pressure ulcer prevention care. Regardless of their mental model, there are concerns about the operationalisation of pressure ulcer prevention care, including risk assessment. The view they hold is that the context of practice: the impact of the organisation, changing healthcare roles and changing patient needs, restricts their ability to deliver best possible nursing care.

Conclusion: The RN holds a mental model of risk that is changeable based on the context in which they practice. This provides an opportunity to utilise practices such as “nudges” that facilitate pressure ulcer prevention. Changes within the healthcare team could be capitalised upon if the use of different roles within the team is well-thought out and properly structured for the benefit of risk reducing practices. An opportunity exists to revise the risk management paradigm to utilise technologies to more robustly deliver objective risk assessment methodologies to improve the reliability of good patient outcomes.

iv. Abbreviations

HCP	Health Care Professional
PU	Pressure Ulcer
PVD	Peripheral Vascular Disease
RA	Risk Assessment
RN	Registered Nurse
NHS	National Health Service

1. Introduction

Modern nursing practice in the UK has evolved substantially from the traditions of nursing established in the late 19th century and throughout most of the 20th century. With the advent of academic training for nurses and the move to professionalisation in the 20th century, ritual and routine has largely (though not completely) given way to critical thought and the application of a formalised notion of clinical judgement (Meerabeau, 2001; Strange, 2001). The value of nursing intuition has been replaced with a need to objectively quantify assessment findings as the basis for further action (Thompson and Dowding, 2001). Even more recently, with political decisions about health budgets, and social factors such as increasing populations and increasing comorbidity, there is greater emphasis on cost effective care. One of the key aspects considered to affect cost effective care is safe care. Higher levels of safety reduce unnecessary spend on treating complications associated with a healthcare encounter (Secretary of State for Health, 2008; National Quality Forum, 2010; Samuriwo, 2010a). Deep vein thrombosis, urinary tract infections and pressure ulcers developed because of failures in the healthcare system cost significant sums to treat and can leave patients with long term deficits (Power, Stewart and Brotherton, 2012).

The author of this study has been practicing as a nurse within this changing climate. As a clinical nurse specialist working within Tissue Viability, the area of change most notable to the author is pressure ulcer prevention. As a clinician, significant amounts of time are spent developing processes that are imposed upon nurses because of requirements from government, national, regional and local leadership bodies as well as line managers. All of this is with the intention that nurses are supported to deliver best practice and evidence based care to reduce the incidence of patient harm from pressure ulceration.

This study has been developed in order to examine the way that nurses in an acute care environment are dealing with the practice of pressure ulcer prevention. Historically, seen as something that was an inherent part of the nursing routine with practices such as back rounds (a 2 hourly planned reposition of all patients that everyone participated in), pressure ulcer prevention is now something that is viewed as a burden and something that prevents more essential functions of nursing such as medication administration and organising discharges. The healthcare system in England saw the following changes to the numbers of people treated in hospital (table 1.1) (The Information Centre, 2002; NHS Digital, 2017):

Table 1.1: Hospital Activity Comparison

Year	Finished Consultant Episodes	Emergency Admissions
2001	12,357,360	3,893,618
2017	19,683,938	5,887,328

Data within table 1.1 demonstrate a rise of almost 60% in the number of hospital admissions and an increase in 50% of people through the doors of an emergency department in the space of 16 years. This is not matched with an equivalent increase in nursing resource to meet patient needs. An NMC (2018) report painted a picture of the current state of nursing numbers and the number of nurses on the NMC register in the 2018 registration year has fallen by approximately 7,000 from its peak in 2015. Despite increases in training places, the number of new registrations from UK nursing schools in 2017/2018 has failed to exceed the heights seen in 2013/2014. The number of nurses leaving the professional register has steadily increased from 21,167 in 2013/2014 to 29,434 in 2016/2017. The numbers of nurses leaving fell to 25,400 in 2016/2017 but both overseas recruitment and retention continue to be a problem with nurses citing poor work conditions, inadequate skill mix and frustration at staffing levels as key reasons for leaving the profession. There are approximately 6,000 more nurses on the NMC register in 2018 than in 2014. However, the Health Foundation (2017) issued a report indicating that in 2016, there were approximately 29,000 nurse vacancies unfilled. This is despite an increase in the number of managers and senior managers within the NHS in 2016/17 of 4.4% (approximately 31,000 more than in the previous year). Despite all of this this, there is a growing requirement to collect data, to complete increasingly complex processes for what were traditionally simple activities, and much of these tasks are completed by nurses at the front line, whose primary function is actually to care for people.

1.1 Focus

Pressure ulcer prevalence among patients receiving care from NHS services has fallen from approximately 6% in August 2012 to 4.4% in October 2018 (NHS Improvement, 2018). The reason for this improvement in individual organisations is often attributed to the impact of an assessment tool, or a piece of equipment, or the delivery of a protocol to direct care. However, there is a lack of a true understanding about how pressure ulcer prevention is delivered by the front line nurse, the processes they follow, how they undertake their assessments of risk and plan care with their patients, what interventions they choose and how this is all done in the context of modern healthcare delivery. The author is interested in this topic, as higher levels of stress are perceived among colleagues regarding pressure ulcer prevention and specifically the assessment of patient

risk. The study will seek to learn the processes that nurses follow in order to operationalise the practice of pressure ulcer risk assessment, the subsequent delivery of preventative care and determine the success with which they feel they apply this.

1.2 Aim and Objectives

Aim:

To explore nurses' perceptions of risk in the context of risk assessment for pressure ulcer reduction in adult hospital inpatients.

Objectives:

1. Describe how nurses perceive pressure ulcer risk;
2. Describe the way that nurses approach the assessment of pressure ulcer risk;
3. Explain how nurses operationalize the judgements they make about risk.

Achievement of these objectives will help the author to understand the role that assessment plays in the formation of a decision to act in a particular way. Further, they will enable greater understanding of how the guidance, protocols, leadership, roles and relationships all play a part in the delivery of pressure ulcer prevention practice.

1.3 Study Outline

This study was conducted in an acute hospital with 850 inpatient beds, in the southwest region of England. It sought the experiences of RN's from 4 distinct clinical areas, spanning medicine and surgery with both acute and subacute specialties. A purposive sampling strategy was used to ensure that views from a range of levels of seniority and experience were obtained. RN's participated in interviews (both group and individual interviews took place) and a phenomenological approach and thematic analysis techniques were used to organise and interpret the data.

1.4 Thesis Structure

There are 5 further chapters in this thesis.

- Chapter 2 analyses the body of literature that deals with the theory of risk perception. It also considers the evidence that supports how people make decisions and on what basis those decisions are made. It considers how effective the assessment of pressure ulcer risk is in the healthcare environment and how the delivery of care is influenced by the socio-cultural context of nursing.
- Chapter 3 considers and details the methods that were employed in order to gather appropriate data to allow valid and reliable conclusions about pressure ulcer

prevention practice in the context of this study to be formed. The study followed a phenomenological route using interviews with RN's in an acute hospital setting.

- Chapter 4 describes the results of the interviews demonstrating a thematic approach to analysis and identifies key theoretical concepts that were drawn from the words of participants.
- Chapter 5 discusses the relationship between theory and the practice that is described by participants, in an effort to form conclusions about how the practice of nurses is influenced by intrinsic and extrinsic factors in relation to the practice of pressure ulcer prevention.
- Chapter 6 summarises the thesis and its limitations. It highlights possible implications for practice including issues that need to be considered by RN's, employers, educators and future researchers.

2. Exploring Risk and the Nurses Relationship with Pressure Ulcer Risk

The assessment of pressure ulcer risk in nursing practice is a mandated and policy driven activity (NICE, 2014). However, there are challenges in accurately assessing a patient's risk for developing a pressure ulcer and determining what interventions might reduce the risk for each individual patient based on their individual needs. This chapter considers a range of models that help to explain how nurses approach the assessment of risk for pressure ulcer development in the patients they care for. This chapter also examines theories that affect the consideration of risk and decision making in order to understand how nurses link these two features of risk assessment in the context of front line nursing practice.

2.1 Literature Review Search Strategy

In order to ensure a contemporary understanding of the application of concepts of risk and associated behaviours in nursing, material primarily from 1990 onwards has been sought, using a systematic approach. However, where work earlier than 1990 had been cited frequently in other texts, or had been identified in key texts, these sources have also been examined. Five databases have been used to undertake the primary search activities; Scopus, Web of Knowledge, Psychnet, CINAHL and MEDLINE.

2.1.1 Theoretical Concepts of Risk and its Perception

This search focussed on the psychological, sociological and neuroscientific understanding of risk as a construct for human behaviour. Literature was sought to explore how these concepts relate to the culture of nursing and how nurses perceive risk in a professional context. Using Boolean search criteria the following keywords and combinations were entered into the databases; risk AND perception, risk AND individual, risk AND culture, risk AND social.

- Step 1 - Total results returned prior to refinement = 498,470
- Step 2 - Limited to the context of nursing = 2,845
- Step 3 - Limited to the context of pressure ulcer prevention = 50

None of the texts in the final 50 citations discussed the psychological, sociological or neuroscientific basis for risk. Thus, in order to relate theoretical concepts of risk to clinical nursing practice, retrieval of studies that specifically discuss the concepts of risk within nursing were sought from step 2 to augment step 3 of this literature search.

2.1.2 Theories of Decision Making

This search was designed to identify the literature base pertaining to clinical decision-making in relation to risk. In order to contextualise this to nursing practice, search combinations included the keywords; ‘decision’ OR ‘decision making’ AND ‘risk’.

- Step 1 - Total results returned prior to refinement = 65,398
- Step 2 - Limited to the context of nursing = 3,643
- Step 3 - Limited to the context of pressure ulcer prevention = 49

2.1.3 Pressure Ulcer Risk Assessment

This search examined the literature that related directly to the assessment of risk, its modalities and its application in nursing practice. Literature relating to the use of tools and clinical judgment, and its relationship to the culture of nursing has been included. Keywords and combinations used to identify these sources were as follows: ‘risk assessment’ OR ‘risk assessment tool’ AND ‘pressure ulcer’ OR ‘pressure sore’ OR ‘decubitus’.

- Step 1 - Total results returned prior to refinement = 1379
- Step 2 - Limited to the context of nursing and in peer reviewed sources = 363

2.1.4 Pressure Ulcer Prevention Care

This search was designed to identify literature that provides an underpinning rationale for the delivery of pressure ulcer prevention care. It describes key aspects of care that feature in contemporary practice. Search combinations using key words ‘pressure ulcer prevention’ AND ‘nurs*’ OR ‘care’ OR ‘intervention’.

- Step 1 - Total results returned prior to refinement = 2,332
- Step 2 - Limited to the context of nursing = 706
- Step 3 - Limited to the last 10 years to exclude out-dated practice = 497

In order to avoid ignoring understanding of risk generated in non-health disciplines, searches were not initially limited by discipline. The initial search outcomes and method, completed in October and November 2013, were repeated every 6 months during the research process to identify new articles for review, with the most recent result numbers included in this section.

There was significant overlap in the literature identified during the searches, most notably between pressure ulcer risk assessment and pressure ulcer prevention care. The reasons for this will be explored in this chapter. A detailed review of every relevant piece of

literature was not possible within the scope of this study, therefore this chapter developed a broad basis of understanding in order to demonstrate current knowledge within the field in the context of the study.

2.2 Risk Perception and the Influence on Decision Making

Risk in healthcare is generally a consideration of the chance that negative outcomes, or harm, might arise as an unintended consequence of the care that is provided to a patient (Battles and Lilford, 2003). Risk is inherently about cost versus benefit, based on the probability of a given outcome arising from a given situation (The Open Group, 2009).

Risk **=** Probability of outcome **x** Severity of outcome

e.g.

Risk for pressure ulceration **=** How likely an individual is to sustain a pressure ulcer **x** How severely that pressure ulcer affects the patient

Deuchars (2004) describes the modern concept of risk as being based on the ability to make this calculation and determine appropriate mitigating strategies. Ely, Miller and Dignan (2011) however, illustrate the complexity around the calculation of risk due to the interpretive nature of the human approach. Their study of self-perceived disease risk among patients suggests that individual context and biases might be as important in the interpretation of risk levels as any objectively measurable factors. Despite risk calculators, this study demonstrated deviation from objectively calculable risk levels based on an individual's own worldview. This is likely to be true in the way that professionals approach risk also. Hedberg and Larsson (2003) suggest that in the context of busy organisations, multiple overlapping workplace social relationships and often complex biomedical considerations, the individual nurse can find it difficult to make sense of competing priorities from competing sources. It is therefore possible that their perception of risk is flawed and this may affect subsequent judgements. In the midst of all this noise, it is important to question how the nurse gathers relevant information, filters out the irrelevant and formulates an appropriate clinical judgement about risk.

2.2.1 Signal Detection

In order to assess risk, it is necessary to obtain relevant information and judge its importance in a given context. Green and Swets (1966) describe signal detection theory (SDT), as a mechanism by which we identify what information or stimuli are important to us. The detection of a given stimulus is reliant on both the intensity of the signal, how obvious it is, and the physical/psychological state of the individual detecting it. In nursing

practice the following scenario is common: a busy RN looking after 12 patients on a ward; some of whom are acutely unwell, others require discharge paperwork and new patients are arriving, complex procedures need to be undertaken, medications administered and all the time, fundamental nursing care is required (assisting with toileting, personal hygiene, feeding). The nurse in this situation may find it difficult to recognise signals of low 'volume' despite being important to a particular outcome. They are expected to assess the risk for pressure ulceration but their prioritisation of that activity may be low (as a result of competing priorities), they may be tired or stressed, there may be other environmental or organisational factors that change their response to stimuli about pressure ulcer risk (Despins, Scott-Cawiezell and Rouder, 2010). McKenna et al. (2014) studied nursing students' responses to patient scenarios. Only 41% of the relevant signals were detected by participants. While this study is focused on novice practitioners, it identified that presence of signal noise and its effect on reducing the ability of individuals to respond to a given situation.

Harrod, et al. (2013) suggest that perspectives about risk might also be affected by the attitudes of individual clinicians and the importance they place on risks for a given problem. In other industries, some of these problems have been improved through the use of checklists and dedicated time and space in which to conduct the necessary assessments away from stimuli competing for cognitive space (Lingard et al., 2008; Nilsson et al., 2010). Checklists help to identify clear processes to be followed and the signals to be specifically observed for. Risk assessment tools (as will be discussed later in this chapter) have been employed widely in pressure ulcer prevention to assist with signal detection by helping to identify relevant information to be sought out. However what has been difficult to solve in healthcare is the surrounding noise that detracts from the ability to recognise and manage risk as it develops, indeed this issue has been documented in terms of both service quality and patient safety (Lee et al., 2013; Despins, 2014; Petersen, Rasmussen and Rydahl-Hansen, 2017). While these studies identify multiple reasons why signals might be missed or their priority be lessened, the presence of intentional and unintentional biases seem to be important in determining whether risk stimuli are responded to.

2.2.2 Impact of Attitude on Risk Perception

Preston and DeWaal (2002) describe one bias based on an individual's level of empathy. In the Perception Action Model (PAM), they describe the response of an individual to a given situation as being dependent upon the state of the object. In the case of nursing, the patient who is more vulnerable in their manner is likely to be perceived with higher levels

of risk by empathetic individuals (nurses). This may mean that some patients who truly have higher levels of risk, but ‘put on a brave face’, may be overlooked, when in fact they are more likely to suffer a negative outcome.

Attitude toward risk is also an important component to consider. Attitude arises from the values, beliefs, prejudices, and previous experiences of an individual in relation to the context they find themselves in (Eagly and Chaiken, 1993). Moore and Price (2004) describe attitude towards pressure ulcer prevention as something that can have both positive and negative influence on outcomes. In their study, attitude was viewed as a spectrum of opinion from negative to positive. They demonstrated that a range of factors can influence the attitude of individuals and more importantly the resulting behaviours. Banks (2012) highlights the impact of attitudes to risk on both an individual and organisational level. The culture that develops in relation to risk will be informed by professional background, organisational approaches and personal experience (Levy and Hershey, 2008). Risk aversion, for example, can generate a skew in the decisions that people make, sometimes preventing perfectly safe behaviours, just in case. In a study by Smith, Ebert and Broman-Fulks (2016) this was demonstrated experimentally by evaluating the response to perceptually risky activities between individuals who exhibit greater, or lesser, amounts of general anxiety about a situation. Furthermore, this study describes ambiguity as a key factor in the relationship with risk. The less certain the outcome, the more cautious the approach. The attitude toward a given construct is suggested to shape how that is perceived and ultimately the reality of the situation. McCaughey et al. (2011) described the impact of multiple influencers of attitude towards safety and risk and the way these helped to both generate and consolidate attitudes.

McCaughey et al. (2011) talks specifically of stress in its ability to generate a bias towards perception of risk. He illustrates, through the use of a survey of healthcare staff, a negative correlation between staff stress levels and the safety climate within an organisation. Buchanan and Preston (2014) describe the response to stress and how it affects decision-making based on neurochemical interactions. They acknowledge that the way each stressor affects different individuals will be dependent on a host of factors. Despite this, both short and longer-term biases can arise as a result. Vahey et al. (2004) describe an extreme form of altered perception that can arise and lead to error blindness. Where nurses cite greater levels of stress, their response to risk is measurably impaired and their reporting of adverse events reduces. This suggests a degree of acceptance and an almost fatalistic approach to risk, in some situations.

2.2.3 Situational Awareness

The situation itself may then be a factor that affects the ability of those agents within it to respond to risk. Endsley (1995) describes situational awareness (SA) as the ability to respond to the relevant, while being aware of the broader context and considering the impact of the specific and the generic. SA can be considered in 3 phases (figure 2.1). If the individual fails to detect risk, either because of perceptual or cognitive factors, any subsequent diagnosis or prediction about outcome will be flawed.

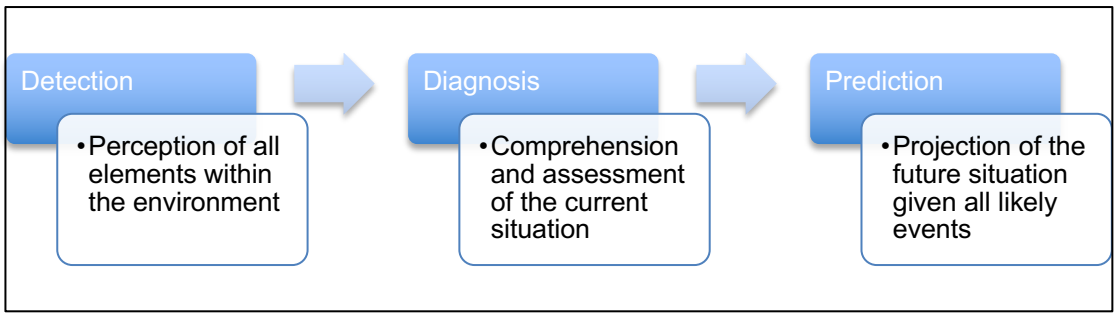

Figure 2.1: 3 phases of situational awareness (Endsley, 1995)

SA may play an important role in how we respond to low volume signals described by SDT, or in emotionally charged situations described by PAM. When high levels of stress are added, and the potential for error blindness increases, the risk that the nurse fails to recognise risk conceivably increases. In an experiment that asked subjects to focus on a specific activity, Simons and Chabris (1999) demonstrated that significant events, in this instance a gorilla becoming part of an observed scene, was missed by the around half of all participants. This demonstrates the concept of inattentional blindness, whereby information peripheral to the direct focus of an individual becomes unavailable to their conscious thought processes.

With such potential deficit in ability to be consciously aware of both error and additional situational information, McKenna et al. (2014) attempted to better understand the way nurses respond to situations as a whole. Their study examined student nurses in a simulated clinical setting and asked them to identify clinically significant data from within scenarios. The students' broad awareness to the nuances within the scenario was low, failing to recognise important and evolving events, due to misplaced focus. As such, their ability to detect relevant signals was evidently impaired. Furthermore, Greig, Higham and Nobre (2014) describe an experiment in which situational awareness is established. Using a video of an emergency situation (one with high levels of stress), experienced healthcare professionals were asked to answer questions about the video after watching. Generally,

the more experienced professionals noted more changes, but even experts consistently noted less than 40% of the important events. This suggests a high potential for impaired situational awareness even among people who are experts in their field.

Stubbings, Chaboyer and McMurray (2012) undertook a systematic review of studies exploring situational awareness and the resulting decision process in the context of nursing. They identified a paucity of research exploring this issue specifically among nurses. Despite this, clear themes were evident arising from the 5 studies highlighted. Non-technical skills were essential for heightened awareness; while knowledge of the clinical context in question was important, it was difficult to quantify what else nurses require to achieve high levels of situational awareness. It also highlighted that when teams learn and work together, they achieve better decision outcomes; understanding and valuing the roles of others would seem to improve the ability to respond to changing contexts. This is reliant on the assumption that all involved are both able to perceive risk as part of the situation and then cognitively process what they perceive. Croskerry (2000) suggests this may be one of the stumbling blocks. The assumption that health professionals have the requisite cognitive skills, alongside their procedural expertise to detect and diagnose the situation, is difficult to confirm. This may largely be because it is difficult to define what those cognitive skills are and how they are applied (Kassirer, 1995).

Cole and Crichton (2006) undertook a series of observations of practice and follow-up interviews with health professionals involved in trauma cases. They identified that factors such as communication and leadership tensions, role competence and environmental context were all key areas of concern for increasing potential error. Increasing focus on resource management and teamwork/communication practices were considered central by those involved in the study for reducing the risk of error and improving the overall attitude towards safety and risk.

2.2.4 Theories of Decision Making

In clinical practice, the RN has to take consideration of risk and make decisions about patient care based on their assessments. Section 2.3 considers the assessment of risk as a specific construct but the decision making regarding risk, considered in this section, is heavily influenced by the way risk is perceived.

The first theory to be considered is rational choice theory (Scott, 2000). It asserts that all actions are based on rational processes and thus require cognitive inputs. Furthermore, the sum of these cognitive inputs and the resulting choices that are made can be used to

explain both outcomes and interactions (Scott, 2000). If this premise is to be accepted, then any social phenomenon is reducible to the choices of individuals and the cognitive inputs on which those choices were based. Decisions are made on the basis of an understanding of known risk factors and how those decisions will affect the outcome in question. In terms of pressure ulcer risk, this approach would result in the following scenario:

> Mrs Bloggs has limited mobility. The nurse identifies limited mobility as a risk for pressure ulcer development. The way to mitigate this risk is to ensure that Mrs Bloggs is moved frequently. The nurse therefore changes the patient's position every 2 hours.

However, rational choice theory is difficult to apply when you increase the number of variables and limit the amount of time in which a decision can be made, thus, this limits the ability to make rational calculations. In the above example, if we consider that the patient has bilateral fractured hips (limiting the ability to lie in any position other than her back), which are painful (meaning that repositioning is not welcomed by the patient) and her comorbid condition (a respiratory complaint requiring her to sit upright), the nurse finds it increasingly difficult to act in a timely manner because of the increasing complexity of the situation. When we limit the nurses time to be able to problem solve, by placing them in a busy ward that is understaffed, has a poor skill mix and a high patient dependency level, it becomes even more difficult for the nurse to consider the risks fully and to make accurate calculations about the most appropriate set of actions to take in the given circumstances. As a result, what the nurse believes and how they act starts to become disjointed. The RN is not operating in the perfect situation rational choice theory demands to be able to make the 'right' decisions.

Slovic, Fischhoff and Lichtenstein (1984) describe behavioural decision theory in similar terms to rational choice theory. It is well suited to mathematical modelling as it posits that behaviour is based on processed knowledge of a given situation. It is this rational processing that enables the resulting choice to be made. In contrast to rational choice theory, behavioural decision theory gives room for the unknown and the situational complexity to have influence. However, Tversky and Kahneman (1974) leverage concerns against overly rational approaches to understanding the actions of an individual in response to risk. It is difficult to predict the sorts of cognitive biases that might arise from factors such as imaginability, estimations of correlation and causation, and heuristics.

If we consider the above scenario, the nursing care that Mrs Bloggs receives may be delivered using a more creative approach and may not result in the most conventionally rational set of actions. The nurse may determine that while traditional repositioning may not be possible, the novel use of equipment may be able to alleviate a proportion of the risk and that may be better than doing nothing. The nurse may choose to use members of the wider healthcare team in an unconventional way, to help some of the lower dependency patients with aspects of their care, in order to concentrate on Mrs Bloggs. The nurse may even deem that because of the patient's condition more generally, Mrs Bloggs may be safe to be positioned less frequently. Whether these sets of actions are 'best' or not, is difficult to ascertain, but behavioural decision theory accounts for a set of actions that are not necessarily calculably 'best'.

Neither rational choice theory, nor behavioural decision theory, seem to account for intention. The theory of planned behaviour (Ajzen and Fishbein, 2005) does, however, consider how attitudes and beliefs about a given construct can affect the way that people think and act. The attitude towards something, the expectations of the situation according to perceived norms and variables, such as knowledge level and opportunity to act, will all affect the intent of an individual in the situation they are exposed to. This makes behaviour determinable. If we can understand a person's overall intent, what they propose to do because of their attitude towards something, their behaviours can be predicted and in turn planned for. In relation to the above scenario, the nurse, who intends to do their best, and is knowledgeable and motivated, will be more likely to find a way to positively respond to the situation and mitigate at least some risk. The nurse who has limited capability is influenced by a different set of social or organisational barriers and is unable to see opportunities to act, will be less likely to respond to the situation in a positive way. By understanding which position each nurse approaches the scenario from, their actions can be predicted and control measures put in place to help support better behaviours.

The 3 theories discussed here provide differing views on the impact of intrinsic and extrinsic factors on the way a nurse may act in a given situation. This seems challenging given the complex nature of the healthcare environment. Despite the aspiration for holistic needs assessment, in the context of pressure ulcer risk assessment, decisions are likely to be made with limited information, or time, to form a judgment (Hedberg and Larsson, 2003). Cognitive short cuts may be necessary to allow nurses to act appropriately in practice and an understanding of these short cuts may help to comprehend the decisions that are being made.

Heuristics likely form a key component of the way that nurses make decisions in the clinical setting. Tversky and Kahneman (1974) provide a detailed overview of the role that heuristics play in decision-making. They specifically refer to 3 main classes of heuristics that are used by individuals when making judgments about probable outcomes. Representativeness, availability and adjustment are principles used to explain the cognitive biases that are employed by individuals, in order to make potentially difficult decisions much simpler to process. Cioffi (1998) refers to heuristics, as a method of cognitive processing that allows for thorough but rapid analysis of the evidence available in situations when outcomes are uncertain. This is particularly relevant in clinical decision-making when the evidence needed to make more rational choices, or predictions of probable outcomes, may be unavailable.

The heuristics of availability and adjustment are not found as frequently in nursing literature as is representativeness. In fact, examination of heuristics in nursing more generally is limited. Cranley et al. (2009) have identified this as a problem for understanding the way that nurses approach uncertainty in their professional judgments. Factors such as the nurses' willingness to seek out additional information and in some instances even be aware that they need additional information seem to affect the way they make decisions. Extrinsic factors that affect uncertainty include the relationships that nurses form with colleagues and patients, working practices and routines that they cannot control. Of particular interest and relevance is the potential mismatch between a nurse's awareness of the clinical situation and the confidence with which they make decisions. The literature review of Cranley et al. (2009) highlights the gaps in understanding about how nurses cope cognitively with the uncertainty of clinical practice and whether they are aware of this.

There are a number of studies that provide descriptions of uncertainty (Baumann, Deber and Thompson, 1991; Tabak, Bar-Tal and Cohen-Mansfield, 1996; Cioffi and Markham, 1997) and nurses various approaches to gathering information to overcome uncertainty (Dee and Stanley, 2005; McCaughan et al., 2005; French, 2006). Though there are other studies that further examine uncertainty, this small sample reveals a culture in which uncertainty is acknowledged as a potential problem for practice. It also demonstrates a relatively rationalist approach to trying to overcome this, often through the use of consultation with colleagues, or other objective sources of data such as published literature. While there is inherent uncertainty when making decisions about risk in healthcare, the representativeness heuristic has been well documented as an important factor.

The representativeness heuristic is discussed by Brannon and Carson (2003) as a key influence on decision-making in the medical professions. Using 2 scenarios to test the conclusions that nurses drew about the condition of their patient, the researchers asked for a single diagnostic label. The scenarios presented patients with potentially either physical, or psychological causes, for their condition. One hundred and eighty two nurses and nursing students were given different versions of both case studies, some with Information about the socio-economic context of the patients. It is not reported whether they were randomised, or had the case studies evenly distributed, therefore, the statistical data reported about significance cannot be fully evaluated. However, this study was particularly interesting as it demonstrated that nurses' clinical decision-making can be skewed by small pieces of contextual information that may or may not be relevant to the decision being made. Information about recent job loss (in scenario 1) and recent alcohol consumption (in scenario 2) was enough to make most nurses move away from organic disease, such as myocardial infarction or cerebrovascular event. Instead, they provided diagnoses related to stress or inebriation. This demonstrates that, in the presence of additional contextual information, the salience of clinical signs and symptoms might be discounted. The representativeness heuristic appears to be activated in the cognitive processing that occurs when nurses make assessments of the patient condition. This raises concerns about the reliability of clinical decisions if the representativeness heuristic can be so easily skewed. Brannon and Carson (2003) do not account for differences in experience level. It may be that with greater experience, nurses realise a high reliability level in their intuitive decision-making. With more instances for comparison, rapid judgments should be more representative of the context.

One context of risk assessment that may follow a similar pattern is the triage of emergency patients. A nurse is required to make a judgment about the priority in which patients should be treated based on their clinical need. Gerdtz and Bucknall (2007) describes this as a process that requires a systematic approach based on clinical evidence. Triage should produce a reliable outcome that is reached rationally and produces objectively repeatable outcomes. However, in studies that explore the degree to which objectivity is achieved, Gerdtz and Bucknall (2007) have shown that objective data are rarely used. Ferrario (2003) also examined the decision-making process in triage. It was demonstrated, using a simulation-based approach to assess diagnostic reasoning, that nurses are likely to make value judgments based on their own sense of the situation. Ferrario (2003) specifically explored heuristics as a mechanism by which nurses make

rapid clinical decisions based on limited tangible information. They illustrated that while rapid decisions might be reached, the assessment may not be the most reliable.

Ferrario (2003) demonstrated a difference in the way that experienced nurses and novices apply the representativeness heuristic. In their study of nurses' responses to questions about patient scenarios, more experienced nurses reliably used the more complex type of representativeness (causal systems) to evaluate synergistic relationships in the scenarios. As situational complexity increases, the cognitive demands on nurses is likely to rise. If nurses are able to utilise the representativeness heuristic fully, more objective judgments about a situation are likely to be reached. In the context of pressure ulcer prevention, the nursing assessment needs to be able to triangulate information about a patient's physiological and functional state alongside the environment in which they are cared for. Only by doing this can they determine both the presence of important risk factors and the collective impact they have in a given context (Page, 2004).

When Borlawsky and Hripcsak (2007) examined pressure ulcer risk assessment, they considered the application of the heuristic approach that appears embedded within the traditional risk assessment instruments and applied them to a computer model. This attempt to manage a set of variables against a pre-defined model of risk for pressure ulcer development should provide greater reliability in output and limit the impact of cognitive biases on the application of heuristics. The ability of the model to accurately predict those at risk was limited. One reason may be due to the inability of the model to consider novel situations or apply learning from broader contexts. The ability of the computer model may also suffer from an inability to discount information of lower clinical value. The computer model also relies on objectively inputted sources of data which do not account for subtle clinical signs or reported symptoms that nurses may interpret more intuitively. Crosskery and Nimmo (2011) highlight the way that individuals may develop ways of thinking that are more intuitive as a result of a range of heuristics and biases that form from exposure to clinical knowledge and practice, as well as broader social and psychological factors.

Intuitive approaches to decision making described by Benner (1984) may be less important in modern nursing practice than originally suspected. White et al. (1992) along with Traynor, Boland and Buus (2010), suggest that nurses may rely less on intuition, partly because of lack of reliability and difficulty in communicating this with others. Mirza et al. (2014) suggest that intuitive reasoning is really a first stage that develops out of behavioural decision-making and a broader situational awareness. Describing this as abductive reasoning, it allows for further cognitive processing using deductive and

inductive methods, to arrive at more rationally sound outcomes. Using a concept analysis method to explore this abductive reasoning approach, Mirza et al. (2014) have been able to demonstrate a model of thinking and decision making that takes account of heuristics, by acknowledgement of the importance of prior experience and the impact it has.

2.2.5 Influences on Decision Making

Risk assessment is more than the identification of risk factors, it is the use of that information, along with other relevant cognitive input, to form a judgement. The individual approach to risk and the culture within which the individual operates, is likely to have a significant influence on the way nurses make decisions. The individual will approach any given decision from anywhere along a spectrum of rationality, it might also be based on tacit knowledge or something more explicit.

Israelski and Muto (2004) describe the phenomenon of human factors as one which causes the potential for errors and biases to affect the outcome of otherwise sound systems of practice. Human factors approaches acknowledge the role that all aspects of a situation plays on the resultant outcomes. Reason (2000) describes a Swiss cheese model of risk (figure 2.2), the image presented here provides a general view of his model in healthcare risk. Each slice represents a potential barrier to patient safety and each hole represents a place where there is a failure of some type. When the holes line up, error is increasingly likely. In pressure ulcer prevention we see barriers associated equipment availability, staff capability, workload, management structures and risk culture and the way that risk is approached and assessed (Moore and Price, 2004; Källman and Suserud, 2009; Strand and Lindgren, 2010).

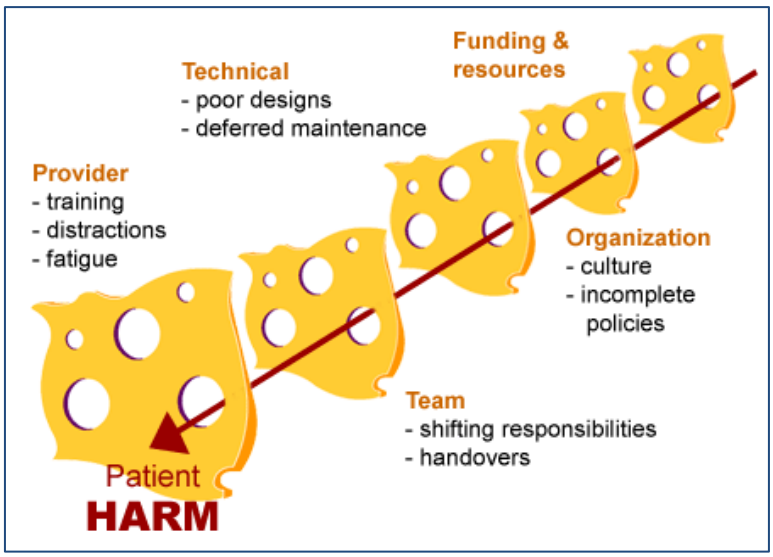

Figure 2.2: Swiss Cheese Model (Canadian Medical Protective Association, n.d.)

Israelski and Muto (2004) relate the incorrect use of risk assessment instruments, or analysis of their outcomes, to a range of potential error sources. Greig, Higham and Nobre (2014), in their study of how healthcare staff perceive a clinical situation, illustrated this effect. In asking staff to identify relevant clinical changes in a video, less than 24% noticed the most clinically significant events. Attention, perception, memory, cognitive processing and response execution are examples of such human limitations. Accepting this as an integral part of the way that risk assessment and behaviour is approached and behaviours evaluated, allows a stronger basis for communication about risk and the development of tools that account for these known problems (Weyman and Kelly, 1999).

What is difficult to account for is the way that individuals perceive the world and the intrinsic beliefs that they hold about risk generally, and in the specific context of pressure ulcer development. Weyman and Kelly (1999) describe mental models as the way that individuals form a cognitive model of understanding about risk and on which they base their behaviours. A mental model forms from a person's experience and understanding of real life. The mental model allows individuals to construct a mental representation of the construct in order to better understand how to apply it to similar situations. Conversely, a mental model will also form irrespective of intention, a person's attitude towards something may be heavily informed by their mental model, which in turn is generated partly through intuitive links (not necessarily objectively true) between cause and effect; how a person perceives the link between stimuli, behaviour and the resulting outcome. It is highlighted that flaws in association between what is tangible and what is understood, could lead to disagreement between expert and lay person. What an expert may view to

be based on an ‘obvious’ correlation, may be completely unknown to the lay person. Despite the intention of assessment tools to standardise, if a person has an incoherent, irrational or incorrect (based on available evidence) mental model in relation to pressure ulcer risk, any tool they use could be meaningless as they apply their own way of thinking in preference to the outputs of an assessment tool. If the mental model is inherently incorrect, then the perception of risk within that model will not lead to an appropriate set of behaviours. However, Defloor and Grypdonck (2004) suggest that expert judgement may itself be flawed and so reliance on their cognitive models as a measure of ‘correctness’ to be aspired to will fail to generate consensus in approaches.

2.2.6 Cultural Influences on Decision Making

Just as understanding individual mental models may lead to a better understanding of practice, understanding similar effects derived from culture may also be beneficial. Banks (2012) describes culture in relation to risk as the behaviours that result from a shared understanding of, and attitude towards, risk and its management. Weyman and Kelly (1999) discuss the sociocultural concept of risk perception and behaviour, citing work by Douglas and Wildavsky (1982) in addition to a series of earlier studies by Douglas. It is posited that individuals will select and respond to different categories of risk in different ways, based on the impact of cultural pressures and the heuristics that have developed as a result of experience.

Exploration of the anthropological understanding of risk highlights that constructs such as hierarchy and political ideology, contribute to an individual’s disposition. These, in turn, will inform cultural biases about risk and response to risk in a given situation (Dake, 1991). Gabe (1995) suggests that developing an understanding of sociocultural influences on risk perception and behaviour in any context can allow specialists in the field of healthcare risk to understand conflict in the way risk is interpreted. This acknowledges that healthcare practitioners are perhaps affected by multiple cultural biases. The way these manifest themselves in practice may be similar to more routine risk behaviour in a person’s non-professional life.

Harrod et al. (2013) also highlighted the recurring themes of competing priorities and attitude toward those priorities in relation to risk prevention. Their work in risk perception and behaviour regarding urinary catheters, shows that nursing care delivery is directly linked to the way nurses prioritise risk. This is likely to be affected by both cultural and individual factors. Their work further suggests that a key factor may be loose coupling of risk. This means that nurses fail to prioritise because they do not see the importance of a

given situation or factor. These cognitive biases, as described by Tversky and Kahneman (1974) can start to explain the dissonance that may arise between the response of the culture and the response of the individual to risk.

Rayner (1992) suggests that it may not be about the importance an individual places upon an issue, but rather some broader factors that affect the perception of risk within a group of professionals based on their own context. Banks (2012) suggest that a complex series of perceptions, behaviours and interactions inform the local risk culture, but that the risk culture will also impact on an individual's personal predisposition to risk. Figure 2.3 illustrates that while personal risk disposition may be the central consideration about how a person perceives and acts with regards to risk, it is at the centre of a growing sphere of influences that are not only based on personal values but enforced by our own behaviours. Additionally the impact of culture on the way we think, feel and behave is extensive and shapes the way we think and feel on an individual level. The research being reported in this thesis will examine the relationship between the individual mental model and those extrinsic factors that influence both its formation and the operationalisation of the resulting attitude toward risk prevention practice.

Figure 2.3: Social Hierarchy of Risk (Banks, 2012)

Furthermore, those individuals who act as role models for nurses in practice have an important part to play in supporting the development of an individual's response to risk, not only in their perception but in any subsequent actions they take. Role models, as described by Felstead and Springett (2016), provide a mechanism by which more junior nurses witness and replicate the behaviours and attitudes they see as being more

proficient than themselves. This can have both positive and negative connotations depending on what has been seen and the underlying attitude of the junior nurse. For example, a studious and attentive nurse who is exposed to a poor role model may decide that either the role model is a good nurse or a poor nurse. If they think that the poor practice is indeed normal and should be emulated, the junior nurse may develop a poorer attitude and approach to practice. Alternatively, they may decide that this is the kind of practice they do not agree with and may seek out alternative role models and practice in a way contrary to the practice they have witnessed thus far.

With concerns about the effects that others have on our own individual practice as an RN, in the context of risk assessment and risk mitigation, there are sociological considerations that may help to explain how the RN behaves in a given context. Culture, teams, norms of practice, internal and external biases all influence the mental model of risk that we hold. Johnson et al. (2007) have illustrated in their study that the way we communicate, the knowledge we hold individually and collectively, the attitudes and behaviours we express the resources available to us and the environment in which we work all directly affect the degree to which our mental models are shared. Resick et al. (2010) further highlight that similarity and difference within shared mental models can be identified and harmonized by considering the dynamic situation in which they form. As the landscape of healthcare changes in the UK, it is important to consider the impact that changes in practice are likely to have on the mental model of pressure ulcer prevention held by organisations, teams and individuals. If this is not considered, the mental model may change and produce less favourable pressure ulcer prevention practices than already exists.

2.2.7 Reliable Action

Given that decision-making in relation to risk does not seem to be applied in a standard way, even with assessment tools available to help guide the interpretation of risk, guidance should play an important part in achieving best practice. However, Saliba et al. (2003) describes adherence to pressure ulcer prevention guidelines in nursing homes in a study that examined case notes of 834 patients in 35 settings. A total of 39% (n=327) of indicated patients did not receive an assessment of risk. Only 50% (n=417) of patients received the 6 priority aspects of pressure ulcer prevention care and there was a total adherence with guidance (which amounted to 6283 interventions within the whole sample) of only 41% (n=2604). While this study is dated, it highlights a significant gap in the delivery of best practice guidelines. This gap leads to wide variation in the care that different individuals receive and does not correlate with their risk levels. Instead, each patient is the subject of a lottery, if an individual clinician chooses to follow the guideline,

the patient gets evidence based care. What we do not understand from this study is why those choices about guideline adherence are made. It is surmised that resources and culture may play a role in the choices of these nurses, but the study objectives do not provide the scope for this to be fully explored.

Manchia et al. (2017) describe a study examining adherence with cardiovascular monitoring for those at risk of a cardiovascular event, resulting from antipsychotic treatment. They identified discrepancies between patients who were objectively at higher levels of risk based on evidence based guidelines and the level of monitoring they received. Younger patients, and patients on first generation antipsychotics, tended to be less effectively monitored despite their profile of risk being equal to, or greater than, other patient groups evaluated. This study does not provide an explanation as to why this is the case, but offers a recommendation for better education about this risk scenario as a solution to the problem. It also suggests a more pragmatic approach to monitoring and increasing contact with the patients' general practitioner, though does not describe what this pragmatic approach might entail.

A study of adherence to guidelines for managing venous thromboembolism in patients with cancer also highlights a gulf between guidance and the choices made in practice (Mahé et al., 2016). In this study however, there is an assertion that guidelines do not sufficiently capture the nuances of real patients and so do not help to establish the true risk/benefit analysis for the individual. Although the study does not present objective data to support its assertions from within its own study, it is suggested that several mechanisms might explain the researcher's experiences and observations in real-life practice. Clinicians own belief in the guidance being offered, alongside the patients' perception of the risks, may affect the choice. Logistics and the perceived complexity of a particular choice alongside the past experiences of the clinician are also likely to affect their judgement when determining whether the guidelines should be followed or not in each case. This study seems to suggest that having scope for professionals to act outside of 'best practice' guidance might be in the interests of the patient, but risks disparity between what ought to be done and what ultimately is done.

In modern healthcare practice, where there are competing pressures on a nurse's cognitive capacity, where systems and processes are overly complex and arguably unnecessary and variation in practice widespread, it can be difficult to make the 'right' decision (Carter, 2016). When one adds concerns about skill-mix into the healthcare environment and consider that people may not have the right levels of knowledge and skill

within a team, it is not only the individual nurse making a decision that is at risk of getting it wrong, but the whole team actually influences that decision. Indeed, Carter (2016) has highlighted these features as significant risks in the wider context of healthcare delivery but it is directly applicable to considerations about risk, harm mitigation and pressure ulcer prevention. One must consider high-reliability care as the focus of efforts in reducing healthcare associated risk.

High-reliability is a concept that has arisen from the transport industry, particularly aviation and applied in healthcare as a mechanism for improving patient safety and reducing medical error (Reason, 1995). Their use of checklists, standard ways of communicating and hierarchical abandonment has helped to maintain extremely high levels of safety in some of the highest risk conditions. Reason (1995) suggests that the traditional model of risk management in healthcare, by which specific processes are instituted in response to an undesired event that already occurred (retrospective fixing of a problem), fails to recognize a set of larger problems that underpin risk:

1. People do not intend to make a mistake
2. Psychological precursors (e.g. stress, fatigue, forgetfulness) are difficult to account for in an individual event
3. Accidents are rarely the result of a single unsafe act
4. Specific countermeasures provide unsafe security that an unwanted event will never recur
5. Over-reliance on checklists and automated processes remove understanding of the underlying issue and leads to mistakes in application of judgment

Helmreich and Schaefer (1994) studied the operating room environment, noting that communication problems were present and directly responsible for frustration, inefficiency and errors that arose. In 128 hours of operating room observation, Lingard et al. (2002) documented high-tension interactions in each operation they observed. They interviewed staff involved afterwards and identified that for each issue observed, participants described social structures and team related barriers to communication as key factors that inhibited the ability to communicate in a direct and efficient way. These tensions tended to drive behaviours that resulted in escalation of tension, or withdrawal from the situation in a defeatist manner.

Reason (1995) cites work by Williams (1988) who examined the situations that gave rise to increased error. Lack of familiarity with the task (as would be expected by novice healthcare staff) increased the risk of error by 17 times, while time shortage increased risk

by 11 times, and poor signal detection due to excessive cognitive noise by 10 times. Educational mismatch between person and task and staff inexperience conversely, only rose the risk level by two and three times respectively, suggesting that these factors can more easily be mitigated.

Organisational factors such as the way work is organised, safety procedures in place, staffing availability and supervision are all considered to have broader impact on risk than just the particular risk being considered (Norris, 2009). Van Citters et al. (2014) discuss a high-value and patient centred clinical pathway for hip joint replacement in an effort to reduce surgical site complications. The pathway was developed following an evaluation of the whole patient journey and a series of group interviews with care teams from 16 hospitals and 2 patient interviews. A total of 132 changes to the way that care was delivered arose from this process and of these, 55 were focussed around communication, the rest included clinical procedures and a wide variety of organisation factors such as skill-mix and procedure timing. Some units performed better than others but variation both prior to and following the introduction of the pathway was widespread.

Parker and Lawton (2000) assert that reducing variation and establishing standardized approaches should help to reduce medical error. In a study of 310 doctors, nurses and midwives, questionnaires were completed asking for opinions and clinical judgments related to a set of clinical scenarios in relation to protocols, absence of protocols and protocols that did not match the situation. Where protocols existed, despite there being potentially good reasons for deviating, participants generally felt that following the protocol was the right thing to do regardless of outcome. In terms of task related human factors, the presence of a protocol should allow for risk reduction, however, inflexibility in thinking about risk and appropriate actions could result in higher levels of harm. Allowing for deviation from the protocol is likely to increase the impact of the type of cognitive biases discussed earlier in this chapter due to an individual's own perception of risk.

2.2.8 Risk Perception Summary

The way that risk is perceived is directly linked to the intrinsic and extrinsic factors at play in a given situation. While these do not necessarily change the absolute level of risk, what they affect is the ability of an individual to respond to signals about risk in a given situation. The way that risk is perceived and the biases that affect that perception are difficult to quantify. Equally difficult is the situational context in which risk arises and agents are exposed to it. An array of sociocultural factors are likely to play a part in the way that nurses perceive and respond to risk, affecting the mental model of pressure ulcer

prevention that they hold. Despite being difficult to define precisely and quantify the impact of biases on the approach to risk assessment and risk mitigation that nurses take, we should strive to be mindful of biases in order to ensure that our assessments of patient risk are as accurate as possible. Validated assessment tools that help to account for variation that arises in both consideration of risk and any resulting behaviour could be helpful.

2.3 Risk Assessment

Given the variability in how individuals might perceive risk, form judgements about the situation and make risk-mitigating decisions, the practical use of risk assessment as a technique warrants examination. The Open Group (2009) highlight the need to have a common approach to risk that acknowledges the complexities associated with its interpretation. Risk assessment should aim to include the following elements:

- Identification of the factors that increase risk of the undesired outcome
- Identification of the existing controls to mitigate risk
- Identification of the organisational context in which the assessment takes place

This should allow for a judgement about risk and that judgement to be communicated in order to reduce the chance of the undesired outcome (Balzer et al., 2014).

Despite this concept of risk assessment, Power (2004) has described a paradox whereby organisations, in an effort to achieve risk mitigation by undertaking risk management as described above, become paralysed by the concept of risk itself. The idea of risk is no longer a simple mathematical consideration described early in section 2.2, but is instead wide ranging in its application to the practices of any organisation. Indeed, pressure ulcer prevention risk assessments are no longer a tool to support the nurse to make sound judgements, they have become something that helps the practice of risk be audited to provide reassurance but does not itself necessarily reduce pressure ulcer incidence (Anthony, et al. 2010). Power (2004) criticises risk assessment due to the uncertainty that remains after the assessment is complete. Because of the impact of so many extrinsic factors on the concept of the particular risk, as has been illustrated in section 2.2 of this literature review, the risk assessment may fail to do anything but enhance the reputation of an individual or organisation in association with prevention of harm. This view is not shared by all and indeed, risk assessment as a process and the role of tools to facilitate it has risen over the past 20 years.

2.3.1 Risk Assessment Tools

Risk assessment tools are a well-established way to improve the accuracy and consistency of risk assessment approach (Lawton and Parker, 1999). However, there is acknowledgement that context changes the way that risk assessment tools are applied and the outcomes they produce (Berlowitz and Wilking, 1989).

Risk assessment tools are also not the reserve of the healthcare industry. Lemunyon and Gilbert (1994) describe a semi-quantitative risk assessment scale to determine the potential for contamination of watercourses from fertiliser application in fields. Their risk assessment examined both quantitative measures of phosphorus and land area along with less tangible qualitative judgements about the weighting of risk of some of the characteristics identified. DeLaune et al. (2004) highlight the need for greater application of objective measures to ensure that the risk assessment is robust and appropriate judgements about mitigation strategies are based on better quantitative measures of risk. Calkin et al. (2011), also in the field of environmental management describe a risk assessment tool used in wildfire management. They highlight challenges with traditional risk assessment tools in wildfire management due to the unpredictable nature of wildfire spread. This tool is based on complex computer modelling of fire behaviour established from a range of different information sources, both live and historical. It also requires data provided to the system about high-risk wildlife populations and human populations in the area that might be adversely affected. This system provides decision makers with a more accurate prediction of risk that was previously available from simpler assessment tools that were unable to account for as many variables. Still, this assessment tool relies on individuals to make decisions about what actions to take as a result of the information the tool provides. Despite this, Calkin et al. (2011) have highlighted the dramatic improvement in outcomes achieved from the implementation of this risk assessment system as decision makers have more accurate and timely information on which to base their decisions.

The two examples above provide two ends of a spectrum of risk assessment. One utilises available information, assigns scores and calculates an overall risk rating. The other utilises artificial intelligence, machine learning and large amounts of data from a wide variety of sources to predict outcomes in real-time. Pressure ulcer prevention risk assessment in the UK currently falls closer to the former type described. The value of these traditional semi-quantitative risk assessment scales in pressure ulcer prevention is questioned by some, partly due to the influence of practice context, partly due to the factors included and excluded and partly due to questions about whether the use of these tools actually result in incidence reduction (Anthony et al., 2010; Moore and Cowman,

2014; Gould et al., 2004). Moore and Cowman (2014) identify around 40 different scales and tools being used in practice to help with the identification of the patient 'at risk'. The three most commonly described tools according to their literature review and the literature undertaken for this study are arguably variations on a theme, all utilising a numerical score to determine the level of risk for pressure ulcer prevention.

The Norton (Norton, McLaren and Exton-Smith, 1975) scale (figure 2.4), is the first in a long line of scales developed to help the nurse to predict which patients are more likely to develop pressure ulceration. With 5 patient characteristics, scores are applied for each risk factor to determine the level of risk for pressure ulcer development; the lower the score, the higher the risk. The scoring system provides textual descriptions of dysfunction to help the nurse to make a judgement about risk level within each parameter.

Risk Factor	4	3	2	1	Risk Score
Physical condition	Good	Weak	Ill	Very ill	
Mental state	Alert	Apathetic	Confused	Stuporous	
Activity	Ambulant	Walks with help	Chair bound	Bed-ridden	
Mobility	Full	Slightly impaired	Very limited	Immobile	
Incontinence	None	Occasional	Usually urinary incontinence	Double incontinence	
				Total score	

Figure 2.4: The Norton Scale (Norton, McLaren and Exton-Smith, 1975)

The Braden risk assessment tool (Bergstrom, Demuth and Braden, 1987) (figure 2.5) takes 6 patient characteristics and assigns a score based on the patient's ability within each category. Each risk factor is given and score and they are then totalled for an overall risk rating. The lower the score, the more significant the risk for the patient. They describe the tool as a conceptual schema in which the nurse can evaluate the patient's needs. Their tool considers the theoretical causal relationships between dependency and the forces implicated in pressure ulcer development. Pancorbo-Hidalgo et al. (2006) found that this tool had the most validation evidence of all pressure ulcer risk assessment scales.

Risk factor	**Level of Risk** (take the number from each box as the score for that risk factor)				**Risk score**
Sensory Perception	1 Completely limited	2 Very limited	3 Slightly limited	4 No impairment	
Moisture	1 Constantly moist	2 Very moist	3 Occasionally moist	4 Rarely moist	
Activity	1 Bedfast	2 Chairfast	3 Walks occasionally	4 Walks frequently	
Mobility	1 Completely immobile	2 Very limited	3 Slightly limited	4 No limitation	
Nutrition	1 Very poor	2 Probably inadequate	3 Adequate	4 Excellent	
Friction and Shear	1 Problem	2 Potential problem	3 No apparent problem		
				Total score	

Figure 2.5: The Braden Risk Assessment Tool (Bergstrom, Demuth and Braden, 1987)

The Waterlow risk assessment scale (Waterlow, 2005) (figure 2.6) provides more categories of risk for allocation of 'points'. Each risk factor is assigned a score, some of which have scores on a spectrum, those scores are totalled across all risk factors to provide a total risk score. As the patient scores higher, so too is the risk deemed more significant.

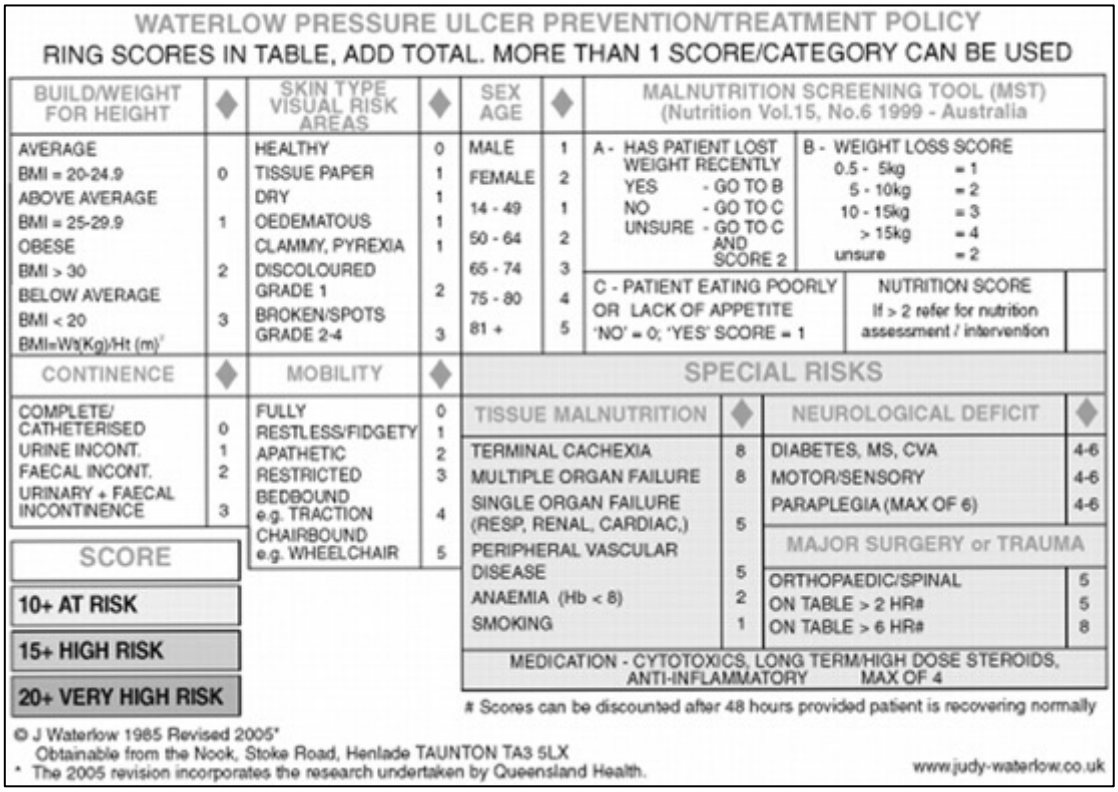

Figure 2.6: The Waterlow Risk Assessment Scale (Waterlow, 2005)

2.3.2 Validation Studies

Questions are often posed in practice about which risk assessment tool is the 'best' and whether they even make a difference to pressure ulcer prevention (Bolton, 2007). This is not an easy question to answer and what is meant by 'best' needs further definition. This is important as particular tools may be advocated in different clinical specialities or nursing practice contexts. Defloor and Grypdonck (2004) describe the epidemiological basis for determining 'best' often being considered as sensitivity and specificity. However, the reliability of such tools, particularly in light of the way they are used to determine standard approaches to care is also of critical concern (Moore and Cowman, 2014).

2.3.2.1 Sensitivity and Specificity

Measures of sensitivity and specificity were examined across the 3 most commonly used tools highlighted above. Hyun et al. (2013) obtained a sample of 7790 patients who were admitted to ICU over a 4-year period and were the subject of a retrospective examination of their medical record. This is the largest sample size identified in this literature search. All patients were assessed using the Braden scale with a cut-off value of 16 used to determine risk of pressure ulcer development. This cut-off score was selected on the basis of earlier work that suggested ICU patients should have a lower threshold for risk

than patients in other clinical areas (Bergstrom and Braden, 2002). With a sensitivity of 95% and specificity of just 20%, the risk was that the nurse would be overburdened with delivering interventions, with limited clinical value, to 80% of their patients. The data collected actually demonstrated better specificity at a lower threshold of 13, but with there was an associated drop in sensitivity also. There are significant challenges in taking these data forward, due to the mechanism of collection. Retrospective studies, while useful, must be considered in light of the limitations they are subject to. The completeness of the data is questionable, particularly where the method of data collection or recording has changed. Another factor is the number of nurses involved in patient care who were recording both the risk assessment data and skin condition data during the period in question. This information is not provided and may affect the reliability of the data if different nurses achieved different assessment conclusions.

Stotts (1988) examines the Norton scale in an elective surgical setting, with focus on cardiovascular surgery and neurosurgery. These patients were considered to be critical care patients for a part of their hospital stay, due to the nature of their surgery. The cut-off Norton score for this study was ≤14 which is in contrast to other studies examining sensitivity and specificity where the cut-off was set at ≤16 (Pang and Wong, 1998). This variability in noting when a patient is at significant risk may affect the interventions delivered for pressure ulcer prevention thus skewing the rate at which pressure ulcers develop. Stotts (1988) does not indicate what, if any, pressure ulcer prevention care was delivered. A significant problem with this study is the very low sensitivity of 16%, the lowest of all the studies identified in this review. While the specificity of the scale was amongst the highest at 94%, there is a significant risk that the vast majority of patients at risk were not detected when using this risk assessment scale.

Weststrate et al. (1998) describe a prospective study based in ICU. It examined 594 patients admitted over a 12 month period. All patients were assessed using the Waterlow scale to determine their level of risk. Overall, the sensitivity of 81% and specificity of 29% is not too dissimilar to the findings of the Hyun et al. (2013), despite both studies having very different methodologies and being undertaken over 10 years apart. Weststrate et al. (1998) illustrated that patients with longer ICU stays had significantly greater chance (60% chance if 30 days or more) of developing a pressure ulcer, than those with shorter stays, irrespective of risk score. They also highlighted that patients with pre-existing high levels of risk according to the scale, prior to admission, were 50% more likely to develop a pressure ulcer than those with only acutely high levels of risk. With these findings in mind, this study seems to suggest that simply having raised levels of risk according to this scale

(i.e. score ≥15) does not necessarily predict risk of pressure ulcer development. In fact, other considerations may be more predictive. One of the risks associated with generalisation of this and other studies based in ICU's are the practices in critical care environments compared to other nursing settings. Patients in ICU will often receive 1:1 care, 24 hours a day, whereas in other clinical areas this is unlikely. This should afford the ICU nurse more time to consider risk and to deliver mitigating interventions.

The ICU population is relatively small compared to the number of general acute admissions in England every year. In the 2015-2016 financial year, 5,716,299 acute admissions were recorded (NHS England, 2016a), of these only 5,860 beds were available for critical care patients (NHS England, 2016b). It seems like the focus on assessments in critical care is disproportionately high to the rest of the hospital inpatient population. Yet, it is difficult to ascertain the reason for this from the literature, but Moore and Cowman (2014) caution against generalising findings from one type of clinical setting to another. Therefore, proportionality in the patient population assessed in the literature should be considered in order to determine the level of evidence available on which to base judgments about the validity of a given assessment tool and whether the same sensitivity and specificity would be replicated in other environments.

Without detailed information regarding some of the contexts for these validation studies (e.g. nurse/patient ratios, pressure ulcer prevention practices), using meta-analysis to form judgments about which tool is most valid can be difficult. One way this might be overcome is to compare the sensitivity and specificity of different tools, concurrently, within the same patient population and there are a number of studies which have undertaken this. Schoonhoven et al. (2002) explored a sample of 1431 patients in the acute hospital environment on 2 sites. These were all medical/surgical ward. Unlike the studies highlighted in critical care environments, where the patient's own nurses assessments of risk and skin condition were collected, Schoonhoven et al. (2002) used a peripatetic research nurse to collect these data. This standardises the approach to risk and skin assessment, thus reducing some of the confounding factors associated with differences between each nurses assessment. For Braden, Norton and Waterlow the sensitivities were 44% 46% and 90%, with specificities of 68% 60% and 22% respectively. Despite the benefits of real time comparison of risk level and skin condition, Schoonhoven et al. (2002) excluded a portion of the population based on the nature of their surgery because it is considered inherently riskier. None of the 3 tools examined were identified as clearly better than another at helping to predict patient outcomes related to numerical risk

scores. In fact, even when considered alongside the impact of pressure ulcer prevention care, there was no statistically significant difference between the tools.

One of the main difficulties associated with consideration of sensitivity and specificity is the difficulty associated with certainty about predictive value (Walsh and Dempsey, 2011). Lahman, Halfens and Dassen (2006) illustrate this concern about the use of the Braden scale as it failed to identify 15% of patients with pressure ulcers as having any significant risk of developing one. In other studies, such as Cox (2011), where 75% of patients did not develop pressure ulceration despite 100% being identified at risk according to a risk assessment scale, concern is raised about the value of such instruments. There were other risk factors that appeared to be more predictive of pressure ulcer development in this study that are not identified by the Braden scale (e.g. noradrenaline use, haemodynamic status). Another concern over a studies ability to demonstrate good levels of predictive value is the role of intervention. The studies identified above all delivered interventions to those at risk, thereby altering their likelihood of developing a pressure ulcer and improving their level of risk. It is difficult in studies that are not conducted in a randomised and controlled way, with adequate blinding, to ensure that the findings relating to patient outcomes are not the result of intervention (Balzer et al., 2013).

Numerous other factors that precipitate pressure ulcer development (or absence of) are difficult, if not impossible, to factor into these quantitative measures of validity. The patient's length of stay in a given environment might affect the statistical likelihood of pressure ulcer development (Weststrate et al., 1998; Stotts, 1988). The patients changing condition, such as becoming more or less acutely unwell during their stay, might affect their resilience to pressure and shear (Hyun et al., 2013), depending on the frequency of reassessment, studies may fail to account for this for an individual patient. The delivery of pressure ulcer prevention care is also difficult to extract from these studies. In prospective studies there would be ethical concerns relating to withdrawal or denial of pressure ulcer prevention care for a patient who is deemed to be at risk by any measure.

What is evident from these studies is the likelihood that the risk assessment instruments might be only part of the assessment picture. The risk level they identify might be affected by factors that are not assessed in any of these tools, for example: the clinical setting, length of stay, nursing skill-mix and patient ratio. Who undertakes the assessment might be as important as the assessment tool itself. Perhaps extrinsic risk factors like these need to feature in the assessment of patient risk in order to inform a fully rounded

consideration of how best to manage the pressure ulcer prevention needs of patients in the real-world context.

2.3.2.2 Reliability

As identified earlier in this chapter, the individual RN is likely to approach risk and make decisions about risk based on a range of intrinsic and extrinsic factors that affect both their mental model of risk and their ability to apply that model in reality as a result of a range of cognitive biases and human factors. Even if the tool is a valid measure of the risk construct, if it does not produce reliable outcomes due to user factors, it may be of little clinical use. Both inter-rater and intra-rater reliability are worth considering. Examination of inter-rater reliability will help with understanding the degree of consensus achieved when different nurses assess patients using the same tool (Wang et al., 2015). Conversely, intra-rater reliability will help to illustrate the ability of the nurse to use a tool consistently and achieve the same assessment outcomes for the same patient at different points in time (with the assumption that the patient's condition does not change) (Kottner, Dassen and Tannen, 2009). However, intra-rater reliability does not appear to be discussed widely within the literature relating to pressure ulcer risk assessment. This may be a result of the potential for a rapidly changing clinical condition of patients and the difficulty associated with obtaining standardised results, therefore this aspect of reliability will not be discussed in this section.

Kottner and Dassan (2010) examined the inter-rater reliability of Braden and Waterlow, alongside a simple visual analogue scale. Across two different ICU's with different nursing teams, they established an intra-class correlation coefficient (ICC) of 0.72-0.84 for Braden, 0.36-0.51 for Waterlow and 0.51-0.71 for the visual analogue scale. This means that while comparing different assessment instruments, the ICC can help us to understand how strong the inter-rater reliability is within each group and compare to each different scale in a standard way. Kottner and Dassan (2010) highlighted particular concerns with Braden about the ability to assess sensory perception, activity level, friction and shear forces with ICC as low as 0.08 for activity levels, 0.17 for sensory perception and 0.42 for friction and shear in either of the 2 ICU's in the study. Some specific concerns relating to individual aspects of the Waterlow assessment include weight and build for height, which uses body mass index as the indicator. Despite having a specific value, one of the ICU's achieved an ICC of only 0.08. Continence, mobility and medication also had very low scores in at least one of the ICU's. The simple visual analogue scale produced a better ICC than Waterlow, though not as high as Braden. It is important to note that none of these tools were assessed as having an ICC greater than 0.8.

Wang et al. (2015) raised concern in relation to the way individuals assess physical condition and incontinence in the Norton tool. Different nurses may judge a patient to be more or less at risk based on their own interpretation of the textual description. For example, in physical condition, the words ‘good’ ‘weak’ ‘ill’ and ‘very ill’ are used in order to determine a score for this category. Words such as ill and weak may be open to significant interpretation by the assessor. Furthermore, interpretation of these words may be affected by a whole host of factors. Despite this, Wang et al. (2015) found that the Norton scale provided an ICC of 0.97. While according to Cicchetti (1994), this would be considered an excellent correlation, the ICC for physical condition was 0.6 and incontinence 0.68 which is less convincing in terms of reliability. These findings did not seem to affect the overall level of agreement about risk in this study, however both physical condition and continence assessment could affect the pressure ulcer prevention care that a nurse plans. When considering the Braden tool, the overall ICC was 0.96, but again, some specific elements have much lower ICC values, both moisture and nutritional assessment were below 0.7. This is despite the tool providing much more detail in the description of these areas, to help the nurse make a consistent approach to assessment. This same study identifies an ICC of 0.92 for the Waterlow assessment tool. Skin type had the lowest ICC of 0.59, likely because of the number of options available, however it is interesting to note that full agreement was not achieved on the criteria related to age and sex, elements which are far less subjective. The study by Wang et al. (2015) is small, it uses only 6 nurses and evaluates just 23 cases and does so across 7 different clinical departments. These numbers may be too low to provide meaningful findings to guide the practice of using risk assessment tools. The study does recommend caution is their use, despite having high overall ICC values because of some of the low values in individual categories within each tool.

While there are other studies that discuss reliability of these tools, there is no compelling evidence from systematic reviews that any one tool is consistently better at achieving reliable measures of risk (Pancorbo-Hidalgo et al., 2006; Kottner, Dassen and Tannen, 2009; Chou et al., 2013; Moore and Cowman, 2014). It is also difficult to determine what should be considered a sufficient threshold for advocating a particular tool, based on its reliability. Polit and Beck (2008) suggest that any given instrument should reach an ICC threshold of 0.9 as a minimum. In the study by Kottner and Dassen (2010), none of the tools reached this threshold, while Wang et al. (2015) achieved this using both Braden and Waterlow. It is therefore important that multiple validation studies that examine inter-rater reliability are performed and consistently achieve this level of reliability if clinicians

are to trust that they are achieving reliable assessment outcomes in their patient population.

2.3.3 Alternative Risk Assessment Strategies

Without the ability of validation studies to reliably establish the most valid and reliable conventional risk assessment tools as described above, alternative methods are worthy of examination. Risk assessment tools currently rely on the RN (or other individual) to assess the patient, determine the presence of risk features, allocate a score and then calculate their total risk according to the tool. This has the problems of various cognitive and sociocultural biases, knowledge deficits and procedural difficulties built in to the process. If some of these biases could be removed, reducing subjectivity and establishing more objective methods of risk assessment, then those patients at risk should be less likely to get missed when considering who requires pressure ulcer prevention care.

There have been a number of studies that examine the value of ultrasound as an objective and quantitative method of detecting early tissue changes that may indicate the development of a pressure ulcer. It is thought that in the very early phases of tissue damage, preventative measures are capable of preventing deterioration and the ultimate formation of an open wound (Bates-Jensen, et al., 2008). Yabunaka et al. (2009) illustrated that traditional ultrasound techniques were able to detect soft tissue oedema overlying the greater trochanter at the site of developing pressure ulcers with 100% reliability. However this study only assessed patients with existing known signs of pressure ulceration and only examined 11 patients. Ultrasound elastography (use of ultrasound to detect changes in stiffness levels of soft tissues, more stiffness indicating developing tissue damage) is another ultrasound method examined for its potential by Deprez et al. (2011). Their study on a rat model illustrated clear areas of early tissue damage that was not visible at the skin surface until later. Again, this was a small study and only examined a rat model but does demonstrate physiological evidence that elastography might prove to be a useful tool. Neither of these techniques have been extensively studied more recently and this may be in part due to the specialised skills required both to use ultrasound and to interpret the images accurately. However, if the principles of these techniques can be applied to simpler devices that are more widely useable, these could prove to be useful tool for the RN.

Sub-epidermal moisture (SEM) detection on the other hand, may provide a more user friendly and widely available technique for identifying early signs of tissue damage resulting from pressure or shear (Bates-Jensen, et al., 2008). SEM can be measured

using bioimpedance to detect different levels of oedema in the superficial soft tissues of the skin. Increased oedema using this technique, like ultrasonography, has been demonstrated to be indicative of early pressure ulcer development (Ching, et al., 2011; Harrow and Mayrovitz, 2014). Clendenin et al. (2015) have demonstrated high levels of reliability (an interclass correlation coefficient of 0.8) between users with a commercially available hand-held SEM scanner, more so that the reliability studies for more traditional risk assessment tools described in section 2.3.3.2 above. Raizman, MacNeil and Rappl (2018) demonstrated a 93% reduction in pressure ulcers in a population assessed using the SEM scanner over a previous population assessed using traditional methods of risk assessment. Interventions in each group to prevent pressure damage were delivered on the basis of the risk assessment/SEM scanner outcomes. The detection of SEM using commercially available scanners would seem to provide both an objective and reliable mechanism to help reshape the way we consider risk detection and reduction for patients.

2.4 Summary

This chapter has illustrated that risk perception and risk mitigation are not simple, linear reliable processes as might be assumed by the language that forms around risk management. The mental model that an individual forms is not developed in isolation; it is a dynamic internal view of both general and specific risks. This chapter has described situational context, cognitive biases and human factors as important influencers on the way that people perceive risk. It is important for this study that the mental model held by nurses is considered as a dynamic construct. The study that has been designed is done so with this understanding and will seek to establish what the nurse's mental model of risk looks like and how it integrates with their practice. It is anticipated that the nurse will hold a personal mental model of pressure ulcer risk that attempts to integrate their own beliefs about prevention of patient harm with the realities of their practice environment and the culture that forms within it. Furthermore, the collective mental model of pressure ulcer risk that develops from the aggregate of individual attitudes needs to be explored if we are to understand why pressure ulcer prevention practices remain suboptimal despite the existence of numerous risk assessment tools designed to help nurses eliminate pressure ulcers for individuals at risk.

The consideration of human factors helps to integrate the idea of the personal mental model into a cultural approach to practice. The things that influence the individual also influence the culture and subsequently the systems and processes developed to limit the impact of pressure ulcer risk. Risk assessment instruments are designed to add higher levels of reliability to the risk assessment process. However, it is suggested that even if

the most reliable, valid risk assessment procedure is identified, the individual's mental model and their ability to respond to the situation will be more likely to explain how nurses practice in relation to pressure ulcer risk assessment. Risk assessment tools are likely here to stay for the time being due to the regulatory requirements and quality assurance they provide, even if that assurance is less than perfect. Potential disruptors to this is may be the use of medical devices that help to measure physiological markers of damage that precede the development of permanent tissue damage. Ultrasound techniques and bioimpedance may help to provide a more objective assessment of patient and tissue specific risks to enable decision making about preventative interventions to be more objectively based. The data collected as part of this study sought to understand how nurses form perceptions of risk, how they practice in relation to risk assessment, both in utilisation of assessment tools and clinical judgement and how they approach risk reduction. If an understanding can be generated about how the mental model is formed and establish mechanisms for improving the reliability of delivering sound clinical judgments, pressure ulcer prevention should be improved.

3. Methodology

This chapter provides an account of the rationale for the use of a phenomenological approach and the methods of data collection and analysis used. It outlines the initial use of a focus group and subsequent use of interviews due to practical challenges with the use of focus groups in the clinical setting. The methods used have been chosen to address the following research aim and objectives:

Aim:

To explore nurses' perceptions of risk in the context of risk assessment for pressure ulcer reduction in adult hospital inpatients.

Objectives:

1. Describe how nurses perceive pressure ulcer risk
2. Describe the way that nurses approach the assessment of pressure ulcer risk
3. Explain how nurses operationalize the judgements they make about risk

3.1 Research Paradigm and Rationale

Given the research objectives, consideration of the appropriate philosophical paradigms are required in order to develop the most effective approach. Overall, this research aimed to interpret the subjective understanding of nurses with regard to their consideration of risk factors and the factors they believe to affect their practice of pressure ulcer prevention. This aim lends itself to the application of interpretivist ontologies, whereby it is acknowledged that the meaning we can glean from the experiences of others is an interpretation of their reported experience. Furthermore, these realities are viewed in the context of the socially constructed reality in which both participants and researchers exist (McEvoy and Richards, 2006).

French (2006) has demonstrated the value in using interpretivist approaches in nursing, trying to understand what information nurses believe they need in order to make decisions. In his study, different nurses made different assumptions, arrived at alternative decisions and required different information dependent on their own experience of the same phenomenon. This underlines the inherent subjectivity in each individual's interpretation of the world around them. This study took similar concepts to French (2006) with regard to the impact on individuals' choices by both intrinsic and extrinsic influences within the context of pressure ulcer prevention care, from the perspective of those directly involved in its practice.

Ethnographic approaches to research were considered for this study. Ethnography, being the study of people, their place and interactions within the cultures they belong to (O'Reilly, 2008), is applicable to this study. The aim and objectives endeavour to derive understanding about how the risk assessment paradigm in use effects and is affected by the people responsible for it. However, in order to generate data that would support an ethnographic approach and develop appropriate analysis to provide conclusions relevant to the study aim and objectives, the methods envisaged would be challenging to administer in the practice context. Observation of practices and timely discussions about the practices undertaken and choices made would be required. Lichtman (2017) suggests that in order to develop the depth of understanding about an individual and the culture more widely, prolonged and repeated access to the sample is required. This is contextually difficult within busty clinical practice areas and undertaking observations where patients will be involved produces ethical implications that outweighed the benefit of this approach. Furthermore, an ethnographic study, while being able to answer specific questions of social interaction, culture and the people involved in the process, would be a less favourable approach for developing an understanding of the process of risk assessment and mitigation needed to address the research objectives.

A grounded theory approach was examined for this study but determined to be incongruous with the study aim and objectives. The study did not seek to determine a specific theory that explains the phenomenon of pressure ulcer risk management as described by Ramalho et al. (2015). Noble and Mitchell (2016) describe the importance of analysis occurring concurrent to its analysis and thus informing the next data collection episode. In order to gain a broad understanding of the phenomenon from a number of different perspectives, it was deemed that grounded theory might change the way that participants were questioned based on the responses of previous participants. This may have resulted in an incomplete perspective of this aspect of nursing practice. From a practical perspective, the time available between participants for data analysis to be conducted was limited due to the clinical commitments of the primary researcher.

The choice of phenomenology was made for the philosophical approach to this research study on the basis of both practicality and ability to address the study aim and objectives in full. Phenomenology, as a methodological approach, makes an assumption that the lived experiences of individuals are specific to them, they cannot be known to others except by the way those experiences are described (Giacomini, 2010). There are gaps in both knowledge and understanding about the phenomenon in question for this study, namely risk assessment and risk management in the context of pressure ulcer prevention.

Chapter 2 has illustrated a good level of understanding about risk assessment in both general and specific pressure ulcer prevention terms. It has illustrated the mental model as the basis for understanding of risk at an individual level. It has considered the impact of both the risk assessment methodology and the context in which risk assessment is undertaken. What is absent from the existing literature is the degree of synergy that exists between these. For this reason, an understanding of the phenomenon in question is lacking. A phenomenological approach will allow this study to explore the perspectives of those responsible for this aspect of nursing practice in order to establish a more thorough understanding of both what the phenomenon is and how it is reflected in nursing practice. From a more practical perspective, phenomenology allows for data to be gathered in a way that generates depth of understanding of the phenomenon from different perspectives and the aggregation of those perspectives to better understand the phenomenon in the context it exists in (Zahavi and Martiny, 2019).

Fereday and Muir-Cochrane (2006) used phenomenological methods to understand how nurses viewed their own professional practice. They were able to identify the relationships between people's own perception of their practice and the feedback they received about their practice. They identified a range of directly actionable findings such as the general preference for how feedback is received. They were also able to discover some more conceptual aspects of the phenomenon such as the importance of trust and respect, familiarity and situational context. The research aim being addressed here has some similarities to this study. By investigating the way nurses perceive risk and their own reports of practice, it is anticipated that some of their own prejudices and expectations will be identified. This will help to develop links between perceptions about risk and reports about practice.

Beltran, Llewellyn and Silove (2008) provide an example of the way that phenomenology can be used in healthcare to understand the subtext and reasoning approaches that are inherent in clinical activities but poorly reflected in existing practice-based schema. In their context, phenomenologically focused analysis was generated an understanding about how individuals consider their practice. This in turn helped the researchers to make recommendations to address gaps between perceptions and behavior. This example relates well to the research objectives of this study, where perceptions about practice are the main concern. Phenomenology can therefore be used to examine the role that nurses play in this area of practice by virtue of the way they interpret their role in that context.

There is precedence for using phenomenological approaches in the study of nurses' approach to risk. However, these studies largely focus around risk to nurses themselves from other sources, such as the study by Kindy et al. (2005) where nurses frequently identified the presence of risk for violence in their clinical encounters. Despite acknowledging risk, many nurses focused on organizational factors that either affected the level of support the nurse received to act or the actions taken by others in response to risk. This is something that was hidden but assumed to be true until the phenomenon was described clearly by those involved in it. Phenomenological approaches can also be used to help researchers understand risk perception and decision-making. Smith et al. (2002) studied the way that patients made choices about receiving screening for genetic disorders based on known risk factors for development. This study was able to identify a range of assumptions, misconceptions and prejudices regarding the process and potential outcomes. It also helped to identify a range of extrinsic factors that affected perception and decision-making. Söderhamn and Idvall (2003) used phenomenology to describe the impact that nurses had on the quality of care delivery. One component of this research highlighted the relationship between patient assessment and action. Of particular note was the role that the nurses' professional knowledge and intuition played in their actions through their descriptions of events. In another study, Lyneham, Parkinson and Denholm (2008) were able to use phenomenology to help describe the links between knowledge, personal and professional feelings and the judgments that nurses made in an emergency setting.

The studies highlighted above use a range of data collection methods; focus groups, interviews, observation and examination of policy. They also use a range of techniques to analyse that data including interpretive phenomenological analysis, hermeneutic phenomenological analysis and thematic analysis. Phenomenology has been useful to understand the links between purposeful cognition and more intuitive awareness. It also highlights the way that people understand their own situation and the impact of the world around them. However, it has not yet been used, as far as can be found, to specifically gain insight into nurses' experience of pressure ulcer risk assessment and related decisions. This study will build on these approaches to data collection and analysis to try to understand these links in this specific context.

Phenomenology can be regarded broadly in research as an approach to the study of human experience, taking account of the perceptions, thoughts and actions of a human being in relation to a defined subject (Sokolowski, 2000; Moran, 2002). In the context of this study, phenomenology lends itself well to the research question. If we are to develop

a better understanding of the way that nurses' use risk assessment methods to make decisions in practice, we need to better understand the steps they take, their related thinking and the factors that influence them when forming clinical judgments, thus considering the whole phenomenon in context.

3.2 The Study Design

While phenomenology is a qualitative approach, there is no prescription for exactly how phenomenological research is designed. There are a number of different data collection mechanisms that can be employed in qualitative studies. Questionnaires, interviews and focus groups are common methods of engaging with a target population and gathering data that relates to them (Silverman, 2013). Each of these methods has the potential to provide data about the way that nurses approach pressure ulcer risk. Equally, though there are commonly used approaches to data analysis, including interpretative phenomenological analysis (Dingwall and Vries, 2010) and thematic analysis (Fereday and Muir-Cochrane, 2006), there no absolute conventions that require one over another. Choices regarding the design of this study were made in an attempt to develop both breadth and depth of understanding in the topic area.

3.2.1 Data Collection

As this was a mainly exploratory study, it was deemed essential to select a method that allowed for direct engagement with the sample population in order to develop a discussion responsive to individual perspectives. This excluded any indirect means of data collection, such as questionnaires, due to the limited nature of the responses that can be reliably provided. Both interviews and focus groups provide a mechanism for developing a discussion that helps the participant to elaborate on their individual perspective of the study phenomenon (Barbour, 2007).

There are a number of reasons for considering focus groups. They allow the recruitment of greater numbers of participants than individual interviews (Shamdasani and Rook, 2015), thus increasing the number of perspectives relative to the amount of time required. Focus groups can help to develop the responses to discussion topics by allowing depth of exploration (Robson, 2011). Relative homogeneity within each group will allow depth of individual views to be explored whilst retaining the cultural context of nursing practice (Krueger and Casey, 2015). Multiple facets of a response can be examined using different techniques to improve validity of the collected data (Robson, 2011).

Carr et al. (2001) have demonstrated the relative benefits of focus group use in their study of what nurses perceive community nursing to be about. The focus was around uncertainty and unpredictability as predominantly lone workers. The use of focus groups alongside other data collection mechanisms such as observations of practice helped the researchers to determine some important themes that gave rise to uncertainty in practice. Doran et al. (2007) also used focus groups as part of a mixed methods approach to gathering information about how nurses sought out and utilised information to inform their practice. In both of these studies, focus groups have helped the researchers to understand how the culture of nursing and the interactions between nurses add to the context of their individual practice. This can be a significant benefit of focus groups as they help to develop an insight into sociocultural responses to a phenomenon (Hughes and DuMont, 2002).

However, focus groups can prove a difficult choice when trying to develop a narrative that illustrates attitudes and behaviours (Barbour, 2007). Because individuals within a focus group may be drowned out by the 'noise' of others competing to share their views or experiences, quieter voices may be obscured. There may also be issues within a group dynamic that prevent individuals sharing their true opinions (Puchta and Potter, 2004). It is suggested that within a given social environment (e.g. the workplace) individuals learn to behave and think in a certain way based on accepted norms. In relation to this study, the individuals are all known to each other and work closely together on a regular basis. This social familiarity could mitigate problems associated with cautious speaking. It is suggested that focus groups are useful ways of capturing the views of individuals who might be otherwise reluctant to participate (Morgan, 1988). Conversely, focus groups have the potential to compound the problem of reluctance. If individuals feel their workplace roles outside of the focus group environment might be negatively affected by their participation, they may be less comfortable sharing views that depart from those of others within the group or the group consensus.

Following discussion with the organisation in which this study took place, reliance on focus groups as the sole data collection method was cautioned against. Concern relating to the ability of staff to be released from clinical practice to participate in scheduled non-mandatory activities was raised. Particular challenges within the organisation relating to high RN vacancy rate and sickness at the time of recruitment meant that this was a likely problem. McLafferty (2004) encountered these problems in her study when trying to use focus groups recruited from a pool of acute hospital nurses. Despite agreeing to attend, both groups failed to convene.

In an effort to balance the challenges of focus group use while trying to obtain data using this method, semi-structured interviews were also considered. While one-to-one interviews will not be able to explore a shared understanding of the phenomenon in question from the groups being examined, they could allow for greater depth of exploration on an individual basis (Samuriwo, 2010b). Benner and Tanner (1987) used interviews to generate a collective narrative of how nurses practice. When considering multiple different practice phenomena in nursing, they were able to identify some common themes among all participants and in all contexts relating to how nurses use judgment to make decisions. This relied on being able to listen to and probe the stories each nurse shared with some flexibility and depth that may have been impossible using focus groups. Smythe (2010), in her study relating to the experiences of safety during childbirth was able to draw on the lived experience of individual mothers and develop a narrative that explained in depth the way that healthcare staff were perceived. While perception may not objectively describe events, this study was able to demonstrate the effect of perception on the 'story' of the event. As Smythe (2010) is studying patient safety, albeit within a different clinical context, it highlights the value of interviews in developing a phenomenological approach to analysis. Smythe (2010) also demonstrates that while interviews do not include direct interaction between colleagues, the researcher is able to draw together different perspectives gained in isolated data collection events. This builds a picture of the phenomenon in question through the lived experiences of multiple participants.

Semi-structured interviews have been used by Dellefield and Magnabosco (2013) to demonstrate the perception of the nursing culture by individuals within an organisation. They were able to build a picture of general practice from the staff groups they examined; however, they acknowledge the limitations associated with trying to generalise their findings from this approach.

Espin et al. (2010) used semi-structured interviews to explore the perceptions of individual nurses in regard to error identification and reporting. Pressure ulcers are often considered a safety error in modern healthcare practice (Harrod et al., 2013; NICE, 2014), therefore the perceptions of nurses relating to error is contextually similar. Espin et al. (2010) used scenarios as a vehicle for gauging the way that nurses perceive error. This study aimed to explore rather than describe thoughts and is based on a phenomenological approach, therefore allowing nurses to consider their own practice and environment may be more

advantageous. Powell and Davies (2012) took this approach when trying to obtain health professionals' views of the delivery of main management services to patients.

A potential problem for this study that was noted by Espin et al. (2010) related to the specific language used by the interviewer and the way that participants interpreted and responded based on this. In an individual interview, there is a greater opportunity for the interviewer/researcher to direct and affect the outputs of the participant. McEvoy and Richards (2006) note this as a concern and further highlight the risk of interviewees being guided to focus on unusual and novel situations by virtue of the questions being asked. In this study, these risks are acknowledged and while participants should be encouraged to consider their own experience, it is important to try to understand whether the examples they provide are representative of general practice or unique to the individual interviewee.

This study utilised both methods of data collection, based on consideration of the benefits and limitations described above, following the practice of several other studies. Clark and Holmes (2007), for example, studied the perceptions of new nurse graduates and nurse managers in relation to the skill and knowledge levels of new nurse graduates. Utilising two different data collection methods allowed the researchers to capitalise on the positive aspects of each method of data collection while mitigating some of the restrictions each has. Balancing the pros and cons of each data collection tool was also highlighted by Santy (2001) in her study of orthopaedic nursing practices. More recently, Coleman et al. (2016), has utilised focus groups and interviews to gather data relating to the development of a pressure ulcer risk assessment tool. A flexible approach to the number of focus groups and interviews was taken so that more focus groups and fewer interviews, or vice versa, could be undertaken depending on the prevailing practice conditions within the hospital and the ability of the organisation to allow staff to participate.

3.2.2 The Data Collection Process

With the initial plan to gather only data from focus groups, it became evident that despite having 4 focus groups scheduled (one from each clinical area), they were not all likely to proceed. Prior to the first focus group, two of the clinical areas cancelled citing challenges with staffing the clinical area. Within the organisation, significant staffing challenges were developing requiring staff to work additional duties and to be reallocated to different clinical areas. Following a discussion with the research and development department, it became apparent that completing the study with focus groups alone would be extremely difficult, therefore all further data collection activities after the first focus group were undertaken using individual interviews. Holloway and Galvin (2017) highlight challenges

associated with obtaining planned samples in nursing research, describing issues related to context and organisational pressures both on sample availability and data collection quality.

Both focus groups and interviews followed the same basic structure (appendix 1) in order to ensure that the same areas of practice were examined. This semi-structured approach used the same key discussion points and followed the same overall pattern to structure each of the focus groups/interviews:

1. Why is pressure ulcer prevention important?
2. What are the risk factors for pressure ulcer development?
3. How is someone deemed to be at risk of pressure ulceration?
4. What actions are taken to mitigate pressure ulcer risk?
5. What affects your ability to think or act in the assessment or mitigation of pressure ulcer risk?

In order to focus the participants, questions 2 and 4 were delivered as an activity. Participants were asked to produce a list of risk factors and then later mitigation strategies and rank them in order of importance. Sayre (2001) suggests that this is a useful way to focus participants. It was also thought to be a useful way of maintaining momentum and structure throughout the interview and ensuring participants were given the opportunity to clarify their priorities (Barbour, 2007).

The dialogue from each focus group/interview was digitally recorded and transcribed. A 2-stage transcription was undertaken. The primary researcher used a manual approach to transcription to ensure that strong familiarity with the primary data was maintained (Robson, 2011) and to avoid software errors that might arise due to terminology, accent and dialect used by participants. A second transcriber was used to check the accuracy of each transcription.

3.3 Sample

Determining the sample for the study required consideration of a range of sampling methods relevant to qualitative studies in order to select an appropriate approach. It is first important to exclude the probability-based paradigm of sample recruitment. This type of sample is extremely beneficial when statistical analysis aims to demonstrate the objectivity of the findings and eliminate bias (Daniel, 2012). However, in a qualitative

study, these considerations are often incongruent with the objectives of the research (Barbour, 2007).

3.3.1 Sample Characteristics

The characteristic of the sample included in any study has the potential to significantly affect the outcomes as a result of the data generated. With concerns about sampling bias due to selection methods in qualitative studies, it is important to take appropriate steps to ensure that an appropriately broad demographic is included within the selected sample population. Langdridge (2007) describes this approach as maximum variation sampling. The aim of this study was exploratory, therefore variation in responses is of value to understanding RN's practice in relation to pressure ulcer prevention. Having identified groups of individuals with a common experience of the phenomenon of pressure ulcer risk assessment and prevention, steps can be taken to stratify the sample further. This ensures that variances in how the phenomenon is perceived are captured from the perspectives of individuals operating in different contexts (Daniel, 2012). In the context of this study, this stratification will help to determine both commonality and differences in cultural approaches of individuals at different levels of seniority and in different practice environments. Todres (2005) highlights the tension between quality and quantity of data in phenomenological studies. He suggests that a small number of good quality phenomenological accounts may be better than a larger number of accounts less reflective of the studied phenomenon. Combining this principle along with maximum variation sampling leads to a compromise in the population characteristics, the stratification within the population and the sample size.

The sample was drawn from a population of RNs at an acute NHS hospital in the South West of England. This allowed subgroups of nurses from across and within different clinical areas to be accessed. RNs within the following 4 clinical areas were eligible to participate:

- Healthcare for the elderly
- Acute medicine
- General surgery
- Elective admissions

Rytterström, Unosson and Arman (2011) describe the importance of common general approaches within a clinical environment to ensure that care delivery is as efficient as possible. Those practicing within the same environment will become indoctrinated into

routines established by local leadership. While these routines may be helpful or otherwise, nurses will generally subscribe to the established routine. Therefore, approaches to practice are expected to be broadly similar within a clinical setting and so provide a degree of internal homogeneity. Conversely, external heterogeneity will help to highlight differences in the approach to risk between different clinical settings. There is also likely to be a degree of internal heterogeneity as different levels of experience are expected to produce slightly different reasoning processes. This has been demonstrated in a study exploring the way that education and experience influence the development of expertise in hospital nurses (McHugh and Lake, 2010). There will be a degree of external homogeneity as senior members of staff across an organisation are likely to behave in a broadly similar way. In order to represent this potential variance, from each of the clinical areas, a staff nurse, charge nurse/sister and a matron will be included in the sample. The mix of heterogeneous and homogeneous characteristics within and between samples will help to give a rich representative data set and allow greater generalizability (Holloway and Galvin, 2017; Krueger and Casey, 2015).

3.3.2 Sample Size

As there is no planned statistical analysis or other quantitative analysis of data, sample size calculations have not been necessary (Daniel, 2012). Smith and Osborne (2008) suggest that saturation is a more important feature when considering the number of interviews to undertake. Saturation is described as the point at which new data/information/insights are not being gathered from each new participant. Smith and Eatough (2014) highlight that in phenomenological studies, large samples may decrease the meaning of the content by failing to do justice to each person's experience. It was difficult to determine an appropriate number of participants due to wide variation in the numbers described in other studies. Powell and Davies (2012) included 71 participants in their study about patient care and professional boundaries. Ryecroft-Malone et al. (2008) included 141 participants across 5 different sites. Moura and Caliri (2013), in contrast included 29 interviews to explore student nurses' views of simulation in education. Simmons and Goldberg (2011) included just 8 participants' interviews though they also described achieving a point of saturation by interview 5, which meant that most of the content of the additional interviews were now so similar that new insights were not being identified. Kindy, Petersen and Parkhurst (2005) also used a small number of participants, including only 10 interviews in the analysis of nurses' experiences of working psychiatric units. Kindy, Petersen and Parkhurst (2005) stopped data collection after identifying the point of saturation whilst Simmons and Goldberg (2011) continued to collect the views of all the planned participants. Wilson (2014) conducted 12 interviews with nurses to better

understand how mentorship works. Though Wilson (2014) did not specifically discuss saturation, she asserted that the 12 interviews provided sufficient breadth and depth to be able to understand the phenomenon.

Studies highlighted above using phenomenological approaches (Kindy, Petersen and Parkhurst, 2005; Simmons and Goldberg, 2011; Wilson, 2014) all had much smaller numbers of interviews that those studies identified above using other qualitative approaches. Charmaz (2006) highlights that the size and scope of the study, as well as the claims it makes regarding generalizability will influence the amount of data required to both achieve saturation then confirm it. This is supported by Guest, Bunce and Johnson (2006) who specifically aimed to clarify whether a defined sample size was useful in qualitative studies and established the need for flexibility. Study aims, population and the quality of data are all much more important contributors to establishing data saturation that a pre-defined sample size.

Because this study used a mix of focus groups and individual interviews, it was important to consider how to ensure that access to sufficient participants was possible. The following considerations were made and discussed with senior nursing leadership within the target organisation:

- Variations in practice are likely to be limited within directorates: practice within medicine will be similar and within surgery will be similar but there will be differences between the two.
- Variations in practice are likely to be different dependent on the route for admission: those admitted electively or in a controlled manner will likely be different to those admitted via an emergency route.
- Most nurses practicing at each level of seniority are likely to have broadly similar experiences in their individual practice areas.

There is variation in the number of suggested participants. Shamdasani and Rook (2015) suggest that between 6 and 12 participants per focus group should be recruited. This number is to address problems associated with not enough discussion or too much discussion affecting the richness of collected data. Krueger and Casey (2015) broadly agree though they suggest more than 9 participants may make moderating discussion and therefore meaningful data collection, difficult. Daniel (2012) considers that in a phenomenological study, assuming interviews are solely used, 6-10 participants will provide enough data to analyse and produce valid conclusions. Where focus groups are solely used, he suggests 3-10 focus groups with 6-12 participants should be adequate.

These numbers will be highly dependent on the context of the study and its objectives. It should be noted that the views of other researchers and reviewers might be in contrast to a study's author and be no more or less valid than the judgment of the study's author.

As a response to the above considerations and expectations to meet saturation, planned sample sizes were as follows:

- Focus Groups – 32 participants
    - This assumes that only focus groups are used.
    - This assumes between 6 and 10 participants (mean of 8) for each focus group over each of 4 clinical areas.
- Interviews – 12 participants
    - This assumes that no focus groups take place
    - This assumes that 3 participants from each clinical area are interviewed.

This study was exploratory in nature and attempted to consider the phenomenon of risk assessment and prevention in pressure ulceration. As such, it is important to recognise that more or less than the planned number of participants may be required to achieve saturation.

3.3.3 Sampling Strategy

A way of identifying the sample is necessary to ensure that the sample represents the phenomenon being studied. Dellafield and Magnabosco (2013) in their study exploring nursing views of organisational influences on pressure ulcer prevention used a purposeful stratified sample technique. This meant they specifically selected participants from each level of practice, from novice to expert. This helped them to ensure that the whole nursing team involved in this activity had their views included. Ultimately 16 members of staff participated and the participation was skewed towards unregistered members of staff. Fossum et al. (2011) also advocate this approach in their study of thinking strategies in pressure ulcer prevention as a way of ensuring that they obtained data from the richest sources and that those participants provided adequate balance between homogeneity and heterogeneity. This current study used a stratified purposeful sample based on the inclusion and exclusion criteria outlined in table 3.1. This sample provided representation from each level of seniority of RN within a ward environment.

Table 3.1: Participant Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
• Willing to participate (signed consent) • Registered nurse (adult/general) with current UK registration • Available for focus group/interview • Working in one of 4 nominated areas for at least 16 hours per week • Permanent member of staff	• <12 months post-registration • Worked for <6 months in current clinical area
Stratification	
• Staff Nurse (Band 5) • Charge Nurse / Sister (Band 6) • Matron (Band 7)	

Volunteers were asked to provide informed written consent (appendix 2; appendix 3) to be involved in the audio-recorded activities and have data generated from their participation used in the final data analysis. Stratification was achieved by selecting to ensure that the different levels of seniority in the ward based nursing team were represented.

3.3.3 Access to Sample

As part of the ethical approval process, the NHS organisation chosen as the site for the study was asked to grant permission to access their staff. The clinical managers for each area were approached to gain agreement to approach individual staff members within their departments. An examination of the staffing complement for the department was undertaken with the clinical manager to identify those individuals who met the inclusion criteria and were eligible to participate in the study. Those individuals were then approached and given information about the study and asked if they would be willing to consider participating. From the volunteers, individuals were selected to provide a range of experience levels and seniority in accordance with the sampling strategy.

3.3.4 Sample Limitations

The study was undertaken in a single acute secondary care NHS hospital and as a result it will not be possible to make assertions about practice in different contexts, for example home care and social care. It will also not be possible to consider the perceptions and practices of unregistered members of the nursing team, despite the contributions they may make to the practice of RNs.

3.4 Data Analysis

Phenomenology and the interpretivist paradigm more generally, is open to criticisms regarding its ability to produce valid and reliable research outputs. The interpretation of data that is highly value laden (in this instance seeking views about how people feel about keeping their patients safe) and influenced by both the content (potentially challenging views about nursing practice) and context of the data collection (where, when and how the data is collected) and has inherent subjectivity (Holloway and Galvin, 2017). This study, due to its exploratory nature, sought to gather information from nurses about how they view practice. This resulted in participants providing a view of the practice of pressure ulcer prevention as they see it. Clancy (2013) describes the double hermeneutic that arises in qualitative research, with particular emphasis on phenomenology. Clancy (2013) describes a study that explores the experience of nurses caring for children in Africa. Clancy (2013) had encountered risks associated with ensuring that her interpretations accurately reflected the views of the participants and described how her own role, interactions with participants and her own background might influence the way data was collected and the way data was interpreted. Those same challenges existed in this study: ensuring that rigour was achieved and that interpretations were not purely subjective but based on rational consideration of the information collected. This study collated and interpreted the views of each individual in order to generate an understanding of what pressure ulcer prevention practice looks like and how it is influenced on an individual basis.

As a practicing nurse working within Tissue Viability, I have a well-formed opinion about what good practice looks like in terms of pressure ulcer prevention. Walt et al. (2008) describe the potential bias of ‘insiders’. While I did not work as part of the teams participating in this study, I am a regular visitor to their areas and have worked with them for over 2 years. Alvesson (2014) identifies the common tension in ensuring that data is collected and analysed by someone who is sufficiently removed from the phenomenon being studied yet with enough contextual insight to be able to interpret the findings appropriately. Clancy (2013) suggested using reflective approaches as a way to ensure biases of this type are open. This acknowledges that this type of bias cannot be removed without removing the researcher, which is not possible in the context of this study, but instead ensures that there is acknowledgement. By confronting this bias in a reflective way, each contact with participants can be improved. It also allows the analysis to be viewed more credibly as it does not try to hide the interpretive element of phenomenological research. Instead, by considering reflective activity as part of the

research process, the conclusions drawn can be viewed as contextual interpretations of the phenomenon. That said, it is important that the structure of the analytical process is maintained to ensure that those interpretations are valid.

Data analysis was conducted using a thematic analysis approach. Guest, MacQueen and Namey (2012) describe the use of thematic analysis as one that is highly applicable to the phenomenological method. Wilson (2014) and Simmons and Goldberg (2011) both use thematic analysis in their phenomenological studies as a way of demonstrating transparency in their analytical process. This is something also advocated by Fereday and Muir-Cochrane (2006) as it helps to ensure that interpretive reasoning can be followed by readers. Balzer et al. (2014) use thematic analysis in their study of clinical judgement in pressure ulcer risk, demonstrating that in the context of this study's subject focus, thematic analysis is of value. Thematic analysis allows for the researcher to use a structured approach in order to understand the context and content of the phenomenon in question. Braun and Clarke (2006) describe a structured approach that will be followed for this study. This will allow a clear process to be followed, provide clarity for the researcher and transparency for the reader in the approach that has been followed:

1 Familiarisation with the data – thorough and purposeful reading and re-reading of each transcript as well as listening to the audio recordings.
2 Coding – the production of short descriptive words or phrases that define the meaning in each relevant passage of text.
3 Searching for themes – looking for similarities and grouping coded data together into larger themes.
4 Reviewing themes – going over the groups of codes, identifying any additional relationships, reducing or increasing the number of themes to reflect the essential concepts.
5 Defining and naming themes – defining what the essential concepts in each theme are and why they stand apart from others, producing a label that clearly identifies this.
6 Writing up – producing the narrative that helps others to understand the 'story' of the themes in the context of the study.

After transcription (described in 3.2.2), a manual process of coding was undertaken. Each transcript was read twice prior to coding commencing. The transcripts were read in order of collection and then re-read. Annotations were added to each transcript in the first stage of coding and each quote that was deemed meaningful or important to the study objectives manually added to a document with a corresponding reference number on the

transcript to allow for easy identification. After this process, each audio recording was listened to in order to ensure that important phrases had not been missed when taken in the context of tone of voice, pauses, or in the context of the focus group, interruption of other voices. Following initial coding, the codes and their quotes were printed and collated into groups using large sheets of paper to allow for easy visual representation. These were examined and regrouped multiple times in order to make sense of the data in the context of the study objectives. As subthemes ad eventually themes were identified, they were named and revised multiple times in order to provide an immediate sense of the issues being identified.

Davis, Golicic and Boerstler (2011) describe the purposeful use of multiple data collection methods in order to develop depth or breadth of understanding for the phenomenon in question. Different data analysis methods are often employed when this is part of the research design. The use of different data collection methods in this study occurred primarily out of necessity and context and therefore different data analysis techniques were not planed. There were some challenges associated with analysing data from different methods of collection primarily relating to the time taken to unpick individual understanding of the phenomenon from a collective experience in the focus group and relate that collective experience to the individual understandings from interviews. Despite this challenge, Palinkas et al. (2015) suggest the value in simplifying analysis techniques to a single method where possible to ensure consistency of approach. To this end, the same thematic analysis technique was employed across the whole data set.

In order to ensure rigour in achieving the above steps, external support was identified. This included and independent sense check of the processes I had followed and the conclusions being drawn. Based on the numbered steps above, support was used as outlined below:

1 A nurse researcher and a tissue viability specialist colleague checked coding of the focus group and interviews 1-3.
2 Emergent subthemes and themes were discussed and agreed with a nurse researcher. These were renamed following discussion and some additional entries identified.
3 Additional relationships and concept linking was achieved following discussion with a nurse researcher and a table-top exercise using mind-maps. This was checked against the reflective journal entries.
4 Consensus with a nurse researcher was achieved following a detailed discussion of the codes, subthemes and themes, including their names in

relation to the research objectives. This was checked against the reflective journal entries.

5 A review of the content of the final thesis was carried out by the supervision team, a nurse researcher and tissue viability specialist colleague.

3.5 Ethical Considerations

Prior to recruitment of participants for this study, an ethical opinion and approval was required from 2 separate sources. Approval from the University of Bath Research Ethics Approval Committee for Health (REACH) was sought, as this was my doctoral institute. In addition to this approval, because the research included NHS staff and took place on NHS premises, approval was also required from that NHS organisation.

The NHS Health Research Authority (2014) provide clear guidance about the level of approval required for research involving the NHS. If the study does not involve patients, only NHS Management Permission, coordinated by local research and development departments, is required. This ensures that any activities planned by the researcher do not conflict with organisational standards or have a negative impact on the health and safety of employees or patients. This provided a mechanism for discussion of sample access prior to submission of the research protocol. There were a number of potential ethical concerns associated with this study. One key concern in this instance was the secure storage of data produced as a result of interactions with NHS staff. Table 3.2 contains some of the key data protection concerns raised by reviewers of this project and the measures put in place to mitigate these concerns.

Table 3.2: Data Protection Measures

Data Protection Issue	Solution
Generation of personally identifiable data	Participants were provided with an alphanumeric designation for notation in the final data reporting. Each participant was assigned a number.
Withdrawal of consent to use data	The personal code was used to match the consent form should any participants choose to withdraw consent and have their data destroyed (Creswell, 1998).
Security of hand written researchers notes and written participant products	Immediately following the focus group or interview, all hand written notes were digitally scanned and hard copies destroyed in accordance with local confidential waste procedures.
Audio recording security prior to storage	All audio recordings were obtained through digital recording devices to avoid the use of tapes which may be lost in transit.
Security of digital / electronic data files	All digital audio files and electronic data files were encrypted on a NHS password protected flash drive. This device was stored in a locked filing cabinet in the Tissue Viability office.
Data disposal	The original data will be archived for 5 years from the end date of the study and then digitally destroyed.

Silverman (2013) suggests that ethical concerns associated with informed consent must be considered. He advises that steps should be taken to ensure that the research participant has enough information to protect their moral and legal rights, but that there may be a gap between this and full disclosure of the research question. In this instance, it was not anticipated that knowing the research question and goals would have any significant impact on the responses obtained. Creswell (1998) highlights the need for honesty and suggests that disclosure of the nature of the research should be full, unless there can be strong arguments that doing so may harm the research findings without adding to the protection of participants. To ensure full disclosure, all potential participants were asked to read the information sheet (appendix 2) and sign the consent form for the study (appendix 3) prior to the data collection episode. This allows the participant time to understand what they are consenting to and the opportunity to ask questions about the nature of the study prior to participation.

The study was expected to comply with the standards required by both the NHS organisation and the University. The ethical approval applications for the university (appendix 4) and NHS (appendix 5) were initially approved on the 15th January 2014 and 24th February 2014 respectively. The initial ethical approval submissions included only focus groups, as consideration had not been fully given to the use of interviews at that time. Premature submissions were made in order to meet organisational timeframes. Deviation requests to include interviews were subsequently approved, without full review, by the University ethics committee on the 7th May 2014 (appendix 6) and the NHS on the 3rd June 2014 (appendix 7).

3.6 Summary

Phenomenology, as the chosen research methodology for this study, has led to choices about the methods of data collection and analysis employed. A sample was identified based on purposive sampling techniques to gather a range of views about pressure ulcer risk assessment and prevention. Different clinical contexts and individuals of different levels of experience and clinical seniority have been included in the sample to generate both depth and breadth of understanding of this discreet area of practice. Despite an initial plan to utilise solely focus groups, the inclusion of individual interviews became necessary as a data collection method. This was the result of organisational challenges that impacted the context of nursing practice at the time of the data collection phase of the study. Despite this, appropriate data has been gathered and the planned thematic analysis method has been followed with the necessary safeguards for rigour and quality. This analysis will be described in chapter 4.

4. Findings

In total, 9 individual interviews and 1 focus group (comprising 5 individuals), were conducted between April 2014 and September 2014. A total of 14 RNs have provided their perspective on the practice of pressure ulcer risk assessment and pressure ulcer prevention. Section 3.3 describes the sampling strategy and challenges in obtaining the desired sample size. Despite a smaller number of participants being recruited to the study than originally planned, saturation was achieved and confirmed by the nurse researcher used to provide an external quality check of the data collection and interpretation. This chapter will outline the key findings from the study; describe the codes, subthemes and themes that emerged from the data and the researchers interpretations of the data based on both what was said and the way it was said. A more in-depth discussion of the data in relation to the relevant theoretical perspectives will be undertaken in chapter 5.

4.1 Sample Characteristics

The sample comprised of RNs from 4 different practice settings as outlined in table 4.1. Band 5 RN's practice as staff nurses, band 6 RN's practice as junior sisters/charge nurses with team leadership responsibilities. Band 7 RN's practice as ward managers with team management, clinical leadership and budgetary responsibility for their area. There were a number of shared characteristics between participants:

- Group A and Group C both worked within surgical specialties, Group B and Group D worked within medical specialties.
- Group A and Group D worked in an acute care context, while Group B provided longer term care for frail elderly patients and Group C worked in planned care, both of these areas should not take emergency admissions for unstable patients.
- Groups A, B and D have a significantly higher turnover of staff and proportion of internationally educated nurses, compared to Group C where this was the opposite case (George (*pers. comm*.) 11 August 2014) according to workplace staffing reports submitted to the Safety and Risk Lead Nurse.

The context of nursing practice is slightly different in each area with some different challenges based on the patient demographic and caseload acuity.

Table 4.1: Participant demographics

Voice code	Practice setting	Age	Gender	Years as RN	NHS Band
A1	Urology surgery	42	Female	20	5
A2	Urology surgery	39	Female	18	6
A3	Urology surgery	41	Female	15	5
A4	Urology surgery	56	Female	22	7
A5	Urology surgery	22	Female	1	5
B1	Elderly care	32	Male	12	5
B2	Elderly care	50	Female	28	6
B3	Elderly care	47	Female	25	7
C1	Planned surgical admissions	32	Female	14	7
C2	Planned surgical admissions	36	Female	17	5
C3	Planned surgical admissions	27	Male	6	5
D1	Endocrinology	53	Female	30	7
D2	Endocrinology	25	Female	4	6
D3	Endocrinology	48	Male	25	5

Participants A1 – A5 delivered their responses as part of a focus group, while the remainder of the participants were interviewed individually. The focus group lasted 2 hours and the mean length of interviews was approximately 60 minutes with one interview lasting less than 30 minutes and 1 lasting almost 90 minutes. Throughout the interviews and focus group, a number of common themes were apparent in participants' experiences of risk assessment and risk prevention. While there were some clear commonalities there was also some diversity in the approach that people took in assessing risk. The same diversity appeared when discussing the factors that affected the operationalization of risk mitigation and the factors that affected the ability to achieve this.

4.2 Qualitative Themes

The thematic analysis of the interviews identified 3 major themes and 7 subthemes based on 32 codes as outlined in table 4.2. When considering the data that was gathered, mental models' were central to interpreting the data. As discussed in the literature review (sections 2.2.5 and 2.2.6), an individual's mental model of a particular risk construct forms as a result of both intrinsic and extrinsic factors. The culture within which the individual operates necessarily influences their thoughts and feelings about pressure ulcer risk.

They observe and participate in both positive and negative activities and discussions about pressure ulcer risk; participants provided accounts of things they considered good and bad. The data was considered in light of the fact that an individual's mental model exists alongside a shared mental model of pressure ulcer prevention and that both of these have the possibility of flux based on what is happening on any given day in the healthcare environment. The codes, subthemes and themes in table 4.2 should be viewed in light of the fact that individuals were describing their own understanding of the phenomenon of pressure ulcer risk. They were illustrating their own mental model, their perception of their colleagues' mental models and the way that the nursing workplace culture either helps or hinders the development of positive practices in relation to pressure ulcer risk.

These major themes and associated theoretical links are:

- Learning and training opportunities influence the way nurses perceive pressure ulcer risk and respond to triggers - *mental models of risk and situational awareness*
- Decisions about risk in pressure ulcer care are influenced by conscious and unconscious cognitive processes - *mental models and human factors approaches to risk and decision making*
- Organisational and workforce factors contribute to a theory practice gap - *Human factors, professional autonomy, power and control*

Table 4.2 is arranged to illustrate the individual codes and the number of times each code had an entry, the rationale for grouping each set of codes into a subtheme, the title of the subtheme, the title of the theme and the theoretical concepts considered important for discussion in chapter 5.

In addition to these themes, 2 further concepts arose and will be discussed in section 4.3 of this chapter. The ideas of culture and the impact of changes to nursing practice were noted throughout the themes and could not be separated as distinct thematic concepts. As the content of each theme is explained, the evidence supporting these 2 additional cross-cutting themes will be developed and explained in more detail in section 4.3.

Table 4.2: Thematic analysis summary

Code (frequency)	Grouping Explanation	Subtheme	Theme Label	Theoretical Concepts
Barriers to learning (9)	Each of these codes is made up of quotes that highlighted the impact that education and training opportunities have on the way that individuals practice in relation to pressure ulcer prevention. Quotes include both positive and negative comments about the impact this has on different individuals and groups.	Perceptions of learning and training opportunity and **impact**	Learning and training opportunities influence the way nurses perceive pressure ulcer risk and respond to triggers	*Mental models of risk and situational awareness*
Education directly affects practice (13)				
Support for junior staff (6)				
Training improves practice standards (4)				
Training is a motivator (2)				
Unregistered staff can contribute further (4)				
Different modes of learning (19)	The quotes contained in these codes related to positive and negative outcomes of activities and experiences that individuals did not associate with education and training but had a significant impact on their attitudes and behaviours.	Situational educational opportunities can be used to target **individual training** needs		
Role modelling (12)				
Shared learning experiences (3)				

Code (frequency)	Grouping Explanation	Subtheme	Theme Label	Theoretical Concepts
Benefits of risk assessment tools (8)	These codes relate to how nurses operationalise risk assessment, what their own assessment of risk looks like and what is needed in terms of knowledge and skill to be effective. They also consider whether they use prescribed tools to support risk assessment and their beliefs about the accuracy and overall utility of such instruments.	Practical delivery of risk assessment relies upon operational **skill, knowledge and belief** of usefulness	Decisions about risk in pressure ulcer care is influenced by conscious and unconscious cognitive processes *Risk assessment for pressure ulcer prevention is affected by a gap between theory, perception and practice which leads to disparity between the decisions made by different individual RN's.*	*Mental models of risk and human factors approaches to risk and decision making*
Delivery of formal risk assessment (19)				
Holistic assessment of patient risks (56)				
Importance of nursing assessment skills (20)				
Limitations of risk assessment tools (37)				
Role of risk assessment practices (25)				
Experience correlates with nursing ability (23)	Quotes from these codes build a picture about how nurses form judgements about risk and the things that influence the decisions they make; individual ability, experience, the context of the organisation (including workload) and the makeup of their teams are all important factors.	Forming **judgements** about risk for the basis of decision-making		
Experience informs judgement (28)				
Nursing intuition (9)				
Owning professional judgements (46)				
Policies and systems (41)				
Team approach to decision making (54)				

Code	Grouping Explanation	Subtheme	Theme Label	Theoretical Concepts
Litigation protection (10)	Each of these codes provide the RNs view about how the organisation directly and indirectly impacts their professional practice and ability to perform in a way that fits with their mental model of risk, professional code and organisational requirements.	Organisational **pressures and drivers** and their impact on the nurses ability to prevent harm in patients	Organisational and workforce factors contribute to a theory practice gap *The risk prevention actions chosen and taken by the RN is significantly affected by both the internal concept of patient care and strategic objectives of the organisation, though there can be a gap between these two components*	*Human factors, professional autonomy, power and control*
Not enough time to deliver nursing care (53)				
Perception of the perception of others (7)				
Staff performance (12)				
Staffing levels (26)				
Workload pressures (63)				
Changes to nursing role (13)	Quotes from this group of codes speak specifically to how the RN role is changing, how RNs interface with patients and the public and how this affects the practice of the individual RN.	The nurses approach to risk has been driven by changes within the **profession**		
Patient engagement (20)				
Modernisation of the nursing profession (13)				
Emotional components of care (19)	These codes isolated the RNs feeling about their role in terms of pressure ulcer risk and prevention as a separate aspect of the mental model.	Thoughts/feelings about patients and their care are an **internal driver of practice**		
Personal motivations (40)				

4.2.1 Theme 1: Learning and training opportunities influence the way nurses perceive pressure ulcer risk and respond to triggers

This theme arises from two subthemes that relate to how learning is perceived and what opportunities for learning exist, in the views of the RNs. Those with the most experience (20 years or greater), and those working at band 6 or above, spoke more about education and training than others.

Subtheme: Perceptions of learning and training opportunity and impact:

Some participants described the type of learning opportunities as being a limiting factor on the competence of colleagues within their environments. Those working within medical areas seemed more concerned about access to opportunities than those within surgical areas, perhaps correlating with concerns about time pressures that became apparent in theme 3. Participants in these areas made comments about the current inability to deliver informal learning in practical environments. One particular comment was:

> "*I keep wanting to… get a spare bed and sort of say, get on there. I'm going to show you guys how to do it. How do you feel? Look you can put your hand under this part, that's how it should be. Do we have time to do something like that? No.... Where are you going to put this pillow? Because you say do a 30 degree tilt and people will put the pillow in totally the wrong place and go why you doing that"* **[B2]**

While another believed that time being made available for formal learning to happen was most limiting.

> *"So [in the past] you could send someone off and you knew that they'd come back with a degree of education and would then have the time at crossover to pass that education on to the rest of the staff and we just don't have that time now"* **[B3]**

Other voices were more positive regarding training opportunities, particularly in relation to unregistered nursing staff. There was a perception that their abilities had improved because of access to learning and that roles were changing:

> *"they're as knowledgeable as we are about it because of the knowledge they've gained through training and stuff"* **[A3]**

There is some positivity about this shift in responsibility for fundamental aspects nursing care, though with a word of caution that individuals must have the requisite knowledge and skill, something that may still be questionable.

"I think as long as the band 2s and 3's have enough training and are given enough knowledge… they're going to be taking over all that personal care we just need to make sure we're training them" **[D3]**

There seems to be a greater emphasis on training unregistered nurses in this area of practice with one participant citing a training deficit for registered nurses.

"*They just say this is your Waterlow, this is what you use to assess pressure area risk and that's it basically."* **[C2]**

The implication here is that if education and training is not sufficient for the RN to fully understand their role and responsibilities, along with the necessary knowledge and skill, then nurses will be left open to criticism.

The lack of perceived fundamental nursing skills from some members of the nursing teams is felt to contribute to poor outcomes. One nurse was particularly concerned about attitudes and behaviours that arise because of previous education:

"you know in Spain and Italy and a lot of these places we're recruiting from, they openly will say these nurses we don't do any personal care, I've never done a bed bath." **[D2]**

Some people acknowledge their deficits:

"I think sometimes we don't understand what the risks are" **[C1]**

While others may be oblivious to their lack of knowledge:

"not many people understand that for example a pressure cushion is more important than a mattress" **[B1]**

Similar concerns were highlighted in respect of junior RN's where pre-registration education or post-registration support may not be as good as in the past.

"*Your nurse training isn't great to be honest… I don't think at any point other than on placement was I taught about pressure area care. I don't think I ever had a lecture on skin integrity"* **[D2]**

"*…you've just qualified and it's scary. I remember being terrified when I first qualified*" **[C2]**

This variety of insight about risk raises questions about critical thinking and reflexivity among the RN workforce and whether individuals are being adequately prepared in the classroom to think critically and integrate knowledge with practice. It also raises questions about the practice environment and whether RNs have sufficient opportunity to develop experience and situational awareness to be an effective RN in the context of pressure ulcer risk assessment and prevention care. The mental model that participants held was inconsistent and they saw inconsistency among their colleagues. Some nurses highlighted knowledge deficits, some identified process gaps. Both of these factors might affect the accuracy of the mental model that the nurse holds and the perception of risk that informs that model.

Subtheme: Situational educational opportunities can be used to target individual training needs

Different methods of learning were important to participants and sometimes learning was felt to be more valuable in less formal contexts.

> *"you get other people's opinions and you get that experience don't you from other people"* **[A3]**

Also in less than ideal situations:

> *"I've worked downstairs and the skill mix was awful. And in some ways that does make them have to learn it quicker and to work it out quicker"* **[C2]**

Formal learning activities also had the potential to produce positive outcomes. Regardless of the opportunity, the individual needs to feel that there is value in the activity.

> *"since the pressure sore collaborative and I think actually pulling ideas and pushing the team together"* **[A2]**

> *"And I think that's what's focussed the zero tolerance so we're a bit, uhhh, this man's got a grade 1, you know cos we haven't had any pressure and we are bit like oooh, what have we done what haven't we done? We need to do this we need to do that so were very like actually we really don't want our pressure sores. Apart from all the impact on the patient and everything else were like ooh actually, were doing really well and we don't want to fall down and have a problem"* **[A4]**

> *"helps your job satisfaction"* **[B2]**

Leadership and contextually relevant learning was felt to be one way of delivering work-based and continuous education with senior members of staff:

> "*Leading by example. Make a positive thing by addressing the negative thing*" **[A2]**

> "*So with people who are relatively new or inexperienced I'll go with them. And you try and teach the best practice you possibly can so they can cascade it to other members of staff*" **[B2]**

> "*And when I do matrons rounds I do talk to them and say their diabetic they're at risk because of this. So they do get some education*" **[D1]**

One nurse did report some potential negative effects of poor leadership. In relation to unregistered staff developing poor practice patterns, one nurse said:

> "*But then newer auxiliaries who've been around the Spanish nurses perhaps don't. And that's where that influence titrates down and becomes dangerous*" **[D2]**

There was an emphasis on learning from practice based events from some nurses. In relation to clinical incidents, one nurse said:

> "*we learn from the problems that we've had. I say, you don't ever forget and you do learn*" **[A4]**

This speaks to the assumption that all nurses have reflective practice as part of their ethos. Another nurse described the need to ensure that poor practice is challenged and corrected to ensure that staff understand what is acceptable. When a patient with advanced dementia refused care from a junior member of staff, the ward sister challenged her:

> "*I said I'm really sorry, but that's not something we can leave. We went behind the curtains, we had a real chat with her, we got her smiling a little bit, and we moved her."* **[B2]**

Some nurses acknowledged the challenges of practice based education either because of situational availability to use as a vehicle for learning or because of time available to deliver education. However, solutions are available, C1 suggests scenario based teaching:

> "*we've got the clinical skills labs and things, where you're able to say to someone, ok I'm going to give you this real life scenario and I want you to tell me what you would do, rather than say this is a grade 1 pressure sore, it occurs for this reason,*

this is what you should do to prevent it. I'd rather make people have to make those judgments and be tested on those judgments" **[C1]**

The overall suggestion here is that the ability to consider risk, and the way we form our own opinions about risk, is influenced heavily by the way we are taught to behave in response to risk cues. That teaching may be in a formal sense, or it may be self-learned behaviour based on our exposure to the practice environment, role models and risk culture, something that there may be less control over from an educational perspective. Regardless of how nurses receive education and supervision, the belief they appear to hold is that their situational awareness will be improved if they have a better understanding of what risk cues are important. This may be better achieved by situation based education.

4.2.2 Theme 2: Decisions about risk in pressure ulcer care is influenced by cognitive conscious and unconscious cognitive processes

Risk assessment for pressure ulcer prevention is affected by a gap between theory, perception and practice, which leads to disparity between the decisions made by different individual RN's. The way that all nurses spoke about risk assessment illustrated a varied approach to the process. The practice of undertaking risk assessment focussed on the use of a pre-defined instrument in most cases. However, all nurses reported the need to undertake risk assessments that did not rely entirely on the use of such tools. Nursing assessment skills and knowledge were seen as essential components of identifying the 'at risk' patient. It is on the basis of a more holistic nursing assessment that people are able to form judgements and make decisions. With this in mind, often there was acknowledgement that a significant proportion of those judgements are done on an intuitive basis. Those nurses with more experience felt more confident in their 'gut' feeling about a patient and their level of risk over and above a planned cognitive process, however it was difficult for those nurses to articulate what made them feel the way they did about those patients.

Subtheme: Practical delivery of risk assessment relies upon operational skill, knowledge and belief of usefulness

The ability of an individual nurse to identify risk and understand what it means, and their nursing skill, is reliant on a number of factors.

"*I think that, [lack of ability to identify risk] is something you get with lack of experience. But it's about developing that experience in the staff as much as possible*" **[B3]**

B2 suggested that there were tangible knowledge deficits:

> "*Lack of knowledge about tissue viability. What I call 'going into sheep mode'. Not actually looking at someone from their own point of view, thinking why is this person like this*" **[B2]**

D3 highlighted the way that this knowledge deficit might affect the value of the risk assessment that people do

> "*It's a good thing [less formal risk assessment methods] if you're confident in your ability and you've got a reasonable amount of knowledge. If you haven't then Waterlow was probably better*" **[D3]**

While knowledge and skill are important, the ability to apply those is practice may be lacking:

> "*I think they've got the skills; they've probably not got the confidence. And what I find is what they say to me is I don't know, there's something not quite right*" **[D1]**

There were numerous accounts of how traditional risk assessment methods could lead to problems.

> "*I don't find the Waterlow's particularly very helpful. It's a starting point, but you can be misled by results from Waterlow*" **[A4]**

> "*but what worries me about tools is that we become dependent on them*" **[B3]**

> "*people rely too heavily on that score*" **[C1]**

By dictating the use of risk assessment tools, perhaps patient care is suffering

> "*I think if you just left us alone, globally, left us all alone to do a 'Roper, Tierney and Logan' type assessment, that to me would be far more beneficial to the patients*" **[D1]**

However, some people believe in the utility of risk assessment tools as a standard.

> "*I think that risk assessment has its place and we need it to standardise people's thoughts and feelings about a situation because you need to be able to say to somebody why did you make that decision?*" **[C1]**

Alternatively, some view them as a way of providing a cognitive support or trigger.

"*I think for new staff and you know, it's a good tool, a good support and I think without it you would be a little bit lost and you wouldn't have like good benchmarking quality practice*" **[B2]**

"*I feel like I could do without them but I wouldn't want to be without them because I think they're useful and I do think they prompt me to remember things*" **[D2]**

Those nurses with more years of experience tended to view risk assessment tools with greater suspicion than those who had been nursing for less time. This may speak to the way that RN's were trained historically, compared to modern training practices where classroom time is viewed with at least equal importance to practical training time. Alternatively it may be a result of the number of years of exposure to similar situations and building of a personal model of practice to explain cause and effect in pressure ulcer formation. Some nurses with highly established mental models of risk who perceive they have good level of skill and knowledge may be resistant to using assessment tools even where their utility is well-proven. Equally those with less well-established nursing routines may more easily fail to recognise risk or resist cognitive biases. Human factors approaches, the use of standardised instruments and treatment pathways may help to provide a level playing field for all RNs, limiting the impact of cognitive biases and professional ego.

Subtheme: Forming judgements about risk for the basis of decision-making

While being aware of how risk assessment is undertaken and some of the issues that may affect the process, actually making a judgement about a patients risk is also subject to both intrinsic and extrinsic factors. Different levels of nursing experience is just one element that may change how risk is interpreted.

"*what's a red flag to me because of my experience is not going to be a red flag to somebody else. We have to be mindful that we all have different experiences really*" **[C1]**

Exposure to specific experiences may change the way the nurse views a particular situation.

"*I've seen so many black heels, purely because of spinal anaesthesia and post-op having been on bed rest for 24 hours*" **[C2]**

"*And seeing bad things as well, that's really good. It's unfortunate for the poor sod whose bum is black but you know, seeing stuff like that, you know, lectures or*

examples or patients who come in with grade 2's from nursing homes. Looking at stuff like that is really useful" **[D2]**

At times, judgements are based on an extrinsic set of directives that determine how nurses operationalise a risk assessment. One nurse said, in relation to how she makes decisions:

"*Well we use the policy that's set here by the trust to start with. It says if the Waterlow is such and such then you do this, skin bundle such and such time, so there is a policy that we follow*" **[A4]**

Ultimately the RN has to be confident in their own process when:

"*…making a good judgment and a good decision regarding what is going to happen*" **[B1]**

C1 highlighted the fear that can be attached to making a decision.

"…that's really scary. *Are you making the right decision? It's the same with Waterlow, should you give them a mattress shouldn't they? Its experience isn't it and confidence*." **[C1]**

D1 further highlighted that even with the underpinning knowledge and critical thinking skills, it can remain difficult to act.

"*I think they've got the skills; they've probably not got the confidence… they're just going through me to action it*." **[D1]**

Despite having risk guidelines and policies to support those with less confidence, skill or knowledge, sometimes decisions about risk can't be made within the confines of those 'rules'.

"*it's having that confidence to say, not sure that I agree with that, but not everyone's going to have that*" **[D3]**

"*If I disagree with it, well I wanted a mattress for somebody, I wanted a mattress for somebody because they were really frail, they didn't sort of come up to the 22 odd that you need so I thought stuff it and I actually increased the Waterlow by various means by popping stuff in, because it was more appropriate for that person at that time. You get a little bit where its, not a jobs worth, but where your experience can actually override sometimes these things. Maybe I shouldn't have done, I think I actually told (TVCNS) that I'd done it, but, I don't care*" **[B2]**

There is also an important role for the team in making decisions. Some participants were very clear that you need information from a variety of sources and the input of a variety of individuals to be able to make a sound judgement about risk.

> "*…making a good decision and a good judgment is not at times important to be done by only 1 person… physiotherapists are very important"* **[B1]**

> "*…we rely on our band 2 and band 3 nurses don't we*" **[A3]**

> "*…because you can't be everywhere at once…*" **[A4]**

> "*…getting feedback from the team you're working with*" **[B2]**

Having engagement from a wide team provides a variety of perspectives that the RN can use to be able to form a judgement based on the full breadth of information available.

> "*Cos things get missed and that's not just with trained staff, that's non-qualified staff and physios, OT's and all of that sort of stuff, doctors probably not so much but. Certainly nursing staff and allied health professions I reckon…*" **[C2]**

Again, the role of the individual and reliance on one perspective is called into question. The impact of cognitive biases and contextual difficulties leads to increased risk for error. Utilising more perspectives, a more holistic view of the patient condition and widening the group of individuals responsible for supporting patient care as part of evidence-based treatment protocols speaks to the human factors approach to safe and effective patient care.

4.2.3 Theme 3: Organisational and workforce factors might contribute to a theory practice gap

The risk prevention actions chosen and taken by the RN is significantly affected by both the internal concept of patient care and the strategic objectives of the organisation. There is the potential for a gap between what is objectively known and subjectively felt by an individual RN and the organisational pressures and drivers they are subject to. This could lead to problems with the operationalisation of risk mitigation measures. It has the potential to create dissonance between what is objectively known about risk factors for pressure ulcer development, what the needs of an individual patient are and how the operational environment supports or impedes the delivery of best practice.

Subtheme: Organisational pressures and drivers and their impact on the nurses' ability to prevent harm in patients

Participants cited a variety of factors that they felt they had little control over but that influenced the way they practice significantly. For A3, the rapid turnover of patients made things difficult.

> "*I think the biggest thing that has an impact on what we do is the number of patients we discharge*" **[A3]**

While A2 thought:

> "*It's the theatre days [that have a major impact]*" **[A2]**

A4 felt:

> "*we do more and more intensive nursing on the ward for those patients who would have traditionally gone to ITU*" **[A4]**

This has an impact on the ability of a clinical area to perform fully when it has not got the staffing establishment to be able to prioritise the sick patients while organising the discharge of those who needed to leave the hospital. A2 reported thinking that:

> "*it changes your mentality as well*" **[A2]**

Going on to talk about knowing what needs to be done but not being able to do it all so you have to choose different strategies to do the best you can in the situation. The time available to achieve the expected outcomes for nursing care is daunting to some.

> "*…you should be looking at everyone's pressure sores, not pressure sores, pressure areas on your shift and in honesty you don't have time to do that*" **[B2]**

Undertaking basic assessments of risk is sometimes unachievable.

> "*you don't always get to it because you don't always have the time to do it*" **[B3]**

Time pressures can be from a specific source:

> "*We get a lot of pressure from the surgeons to get patients ready… time pressure is huge"* **[C2]**

D1 considered time pressures as being something that more often arises from multiple sources and can be overwhelming, leading to perceptions of poor attitude.

> "*So there are time pressures rather than a lack of compassion and wanting to do well*" **[D1]**

With more expectation on nursing time and no change in resources to accommodate this, staff struggle to achieve all of the necessary assessments and interventions for 'perfect' patient care.

"*So we're having all these things thrown at us and I do think that there's less time to do them*" **[D2]**

Staffing numbers was a common concern.

"*as everywhere, short of staff, short of staff goes to poor quality care*" **[B1]**

"*having too many patients for one RN*" **[B2]**

B3 sounded defeated by the inability to deliver best practice.

"…*because were always short staffed*" **[B3]**

"…have we got enough pairs of hands on the ground to actually deliver the care that we know patients need?" **[D1]**

This concern is echoed by other members of the same team, D3 citing the impact of poor staffing on the ability to actually deliver care because at time he doesn't have

"*…the staffing levels to enable me to execute the planned interventions*" **[D3]**

This factor at times caused some a degree of emotional distress.

"*Some days if you're short staffed you feel like you've just survived. You've just got those patients through the day; you don't feel like you've achieved anything and there no step closer to being fixed… some days if you're short staffed and the acuity is high and just for whatever reason really busy, sadly you just have days where you just get through*" **[D2]**

The only group that seemed unaffected by staffing levels was in planned surgical admissions, they acknowledged that staffing was a challenge in some areas, but this didn't affect their ability to deliver pressure ulcer prevention care.

"I've worked downstairs and the skill mix was awful…" **[C2]**

Instead, this group seemed to perceive that time management of individuals was the more significant factor.

"*it's a lot on the time management side of it, you know, you've got to get, like here to input all of that information before they go to theatre is virtually impossible some days*" **[C2]**

"*I've got some nurses whose time management is shocking*" **[C1]**

This ability to manage in the face of external drivers is something that wasn't reflected so clearly by any other group and perhaps reflects the dependency of the patient population they cater for.

D1 identified that changes in nursing practice are often driven by management and their expectations. The completion of a risk assessment tool has started to feel like something that is not necessarily patient focussed but process driven.

"*the culture of the hierarchy impacting on the nursing and me as a Matron, probably 3 times a day I'm saying you've not done your MUST, you've not done your Waterlow so they're having to come to the computer to do that, that's an anomaly cause they're doing it there and the patients over there*" **[D1]**

It was felt by 1 participant that the balance of priorities in nursing had been shifted so far that at times inability to achieve the unachievable felt personal.

"*I think because the tissue viability agenda is so highly prioritised, maybe even aggressive*" **[D3]**

With greater focus on following set protocols, nurses' time is perceived as being taken away from patients. However, some changes in management approach are viewed more positively.

"*I don't think we can attribute our reduction in pressure sores to having 'this policy' or having 'this assessment tool' I think it's to do with having raised awareness and the changes in no blame culture*" **[C1]**

"*I think that accountability is better, I think that governance is better, I think the process of candour and the expectation of candour is better. So I think that patients being given a real picture and real information about their condition and their care I think things have improved enormously*" **[B3]**

Changes in nursing routines are also thought by some to be affecting their ability to nurse.

"*And I think some of that, part of that is to do with the long days and the reduced continuity of care*" **[A4]**

"*I've got members of staff who come to work for 2 long days, they're young, they're in their 20's and they spend the whole of the 3rd day in bed because they're exhausted from those shifts*" **[B3]**

In addition to these organisational pressures, it was also felt by some that the pressure applied by specific people or teams meant that nurses felt overwhelmed and unable to achieve the expectations of the hospital management.

"*I think the stress and the work that have been put on the individual nursing staff, all of them but the registered being far more accountable and having far more to lose, their stress level is higher, I think that those stress levels have been increased enormously, almost, almost to the point of it not being able to increase any more*" **[B3]**

The focus group had been involved in a service improvement project instigated by the organisation, which they referred to a number of times as being an important driver in their change in attitude, this was seen as a positive thing

"*We've always done, obviously done pressure area care but it's never been such a high priority as it is now… I might have sort of had a like well it's inevitable that some patients are going to get a pressure sore… Where now my ethos has changed completely to think that actually they should all be preventable erm and we strive to have a zero tolerance for pressure areas really. Which I don't think was the ethos of the ward before was it*" **[A4]**

The journey to improvement is still perceived to be unfinished.

"*We are not perfect but on the whole I think we're doing better*" **[A1]**

Despite some of the issues identified by nurses being fatalistic in their representation, there appears to be opportunities in trying to understand how those factors affect behaviour. The nurses feeling that they are overworked and operating in an overly pressurised environment might actually provide an opportunity to understand how these feelings arise and how they might be overcome by changes to systems to improve the link between knowledge and practice rather than focussing on the practice of each individual.

Subtheme: The nurses' approach to risk has been driven by changes within the profession

Modern nursing practice has changed from the way a number of nurses were taught originally, whether it is process, equipment or approach, things are thought to be different. The nursing process no longer seems to follow the prescribed routine of assessment, planning, implementation and evaluation, instead it less well-structured and much happens informally.

> "*I think that most of the nurses on our ward are experienced enough and informed enough that the Waterlow score might come at the end of our shift and we've already done the prevention throughout our shift naturally just by knowing the patient and by knowing their medical history and everything else and by looking at them like you said*" **[A3]**

A2 highlighted that often, it isn't the RN making the assessments

> "*they've [HCA] had that close contact with the patient already and already started making that assessment for you*" **[A2]**

What constitutes a care plan and when it occurs has also changed.

> "*Care planning itself has changed a lot and you get a lot of pre-written stuff that people don't look at until after they've cared for the patient, very rarely do you read the care plans and then care for the patient"* **[A4]**

B1 highlighted the failures that occur when:

> "*…people did not read that care plan and do not know or have been not informed what is going to happen or what is going to be in place*" **[B1]**

However D3 reports:

> "*I don't think people, certainly we know that we don't read care plans, we read care plans at the end of the day when we're doing our writing, not at the start of the day*" **[D3]**

By moving the time at which assessment and care planning occurs and the importance it is given before action is taken may lead the nurse to fail to assess patient risks and deliver nursing care that is unnecessary or fail to deliver something that is essential.

Some perceive that nursing is losing something in its identity and the way the profession practices.

"*the new age of nurses become less intuitive in their outlook of healthcare*" **[B3]**

"*I think as nurses we are not allowed to, we're no longer able to use our intuition and common sense. We don't allow that anymore*" **[C2]**

There seemed to be a sense that increased bureaucracy and use of standard approaches might result in failure to act if, despite a checklist or risk scoring system, the patient does not meet the threshold for action but has a presentation that requires intervention.

"*I think that's a skill that's underestimated with all the paperwork and tick boxes and the care planning that we have to do following this that and the other rather than just looking at our patients… for instance… they might not have a raised early warning score but if you said I've just got a feeling, its valid*" **[D1]**

There are distinct changes with what the role of an RN and the team around them is perceived to fulfil.

"*I think the nursing role's changed in the 4 years that I've been nursing, yeah. So I don't know how these nurses that have been working for 20 or 30 years must feel. I think the role has changed loads… I think band 2's are becoming more like Registered Nurses and Registered nurses are almost crossing over into doctor land now*" **[D2]**

There is a sense of loss among some of the nurses about these changes.

"*But you know in the last 10 years or more, nurses have taken on far more of what junior doctors used to do, erm, you know, we didn't used to give IV antibiotics 20 years ago or whatever. You know all that sort of stuff. And that's more our role now isn't it. And actually it's probably more and more a HCA role, the day to day, unfortunately that's the way it is, and things like peoples skin integrity is probably something that the auxiliaries have more to do with than the qualified nurses. That's a shame.*" **[C2]**

When talking about some of the challenges and the reasons for these changes, B3 said:

"*I think they are. I think it's a matter of making sure they're capable of it, like everything. I think that they are because things have changed so much now that the registered nurses are so involved in the drugs and the discharges… you'd run the risk of it [care] being neglected if it wasn't for the NA's doing it*." **[B3]**

Two of the nurses specifically expressed how essential it was that the unregistered staff were empowered to act, they reported how valuable utilising team members in less traditional ways was but that this required investment in their development.

> "*training the auxiliaries and the HCA's to be the experts in skin care and things has been a brilliant, because we do rely on them a lot more than we have done before*" **[A3]**

> *"…they (HCAs) don't sit there waiting for me to tell them and that he's been lying on a hard mattress, hasn't been turned for 3 hours, hasn't had any lunch hasn't had this and hasn't had that. Been incontinent and have nobody do anything about it. That wouldn't happen because they do it. So I don't need to formulate a plan because largely they've already done it, they know, up comes the patient, they look at him and they action it"* **[D3]**

The change to the nurse's role appears to have outpaced the cultural change. There appears to be a tension between roles, autonomy and responsibility for delivering patient care. With the feeling that they are over-managed, that roles are being changed by virtue of emergent necessity rather than in a more planned and considered approach, there is concern that patient safety, while held on a pedestal, is not the key concern of all individuals involved. It is essential that the role and power are considered in the context of nursing culture in order to understand the links between risk culture and nursing culture.

Subtheme: Thoughts and feelings about patients and their care are an internal driver of practice

Participants consistently provided a moral argument for pressure ulcer prevention.

> "*What you owe the patient*" **[A3]**

Patients who develop a pressure ulcer whilst receiving nursing care have somehow been failed.

> "*I feel we'd let them down if they end up with a pressure sore. I feel like that's something we should have been able to stop from happening*" **[A4]**

That failure can feel very personal.

> "*I don't want my actions as a nurse you know to impact a patient like that, so I think maybe that's got something to do with it for me*" **[A5]**

B3 reported a feeling of guilt when a patient has been:

"*…given them any kind of sub-optimal* care and that feeling doesn't stop when you leave work" **[B3]**

"*I don't want to go home upset thinking that happened on my shift*" **[D2]**

Some participants had a very personal view of their purpose.

"*my role in this hospital in this world probably is to serve my patients*" **[C1]**

Others projected their expectations of the care they would have for their own loved ones.

"*just think if somebody else would do that to your mother or your father, how would you felt*" **[B1]**

"*my grandparents and parents are going to start going into hospital and I wouldn't want it to happen to them*" **[D2]**

Other participants saw any failing in nursing care as a reflection on the profession sometimes with personal connotations.

"*If somebody gets a pressure ulcer, you've done an awful job as a nurse*" **[B2]**

"*I'd feel a massive failure as a nurse*" **[C2]**

"*I think if we do anything to a patient where they end up with an injury worse than they came in or an injury in addition to the one they came in with, then we've not done our job properly*" **[C1]**

Some participants also ventured a guess as to why pressure ulcer prevention is of a lower standard when provided by some of their colleagues and suggested that they strive not to be viewed in the same way. B1 suggested that "*laziness*" was the key reason why some nurses didn't provide the right care and D2 had a similar more general view

"*a lot of nurses now are lazy… there's a tendency to blame, 'oh it was so busy' on not doing something*" **[D2]**

C2 gave an account of a discussion with a colleague that resulted in the following statement:

"*he's not my patient and I don't really care*" **[C2]**

The participant was upset that any nurse could respond in that way to a patient in need. C1 also acknowledged that some personalities in nursing are less focussed on direct care provision.

> "*You know when you get a patient going can I have a cup of tea, I need to go for a wee, or I need this I need that, for some people it's like I need to get my paperwork done I need to get whatever done*" **[C1]**

As the role of the RN and that of other staff within healthcare changes, there would seem to be the sense that some participants viewed some of their colleagues as being too important to deliver some of the more basic hands on care. All the participants, with the exception of C3 (who gave no view on this matter), gave the impression that they felt that this move away from practical care delivery was detrimental to patients. They should be more involved with this aspect of care and less involved in the bureaucracy of nursing to ensure high quality care delivery is achieved. The considered change of roles and ensuring that culture is considered in the context of delivering higher reliability in the risk reduction care is of vital importance. If this is not considered, as roles change, there is a risk that gaps in care open up instead of being closed.

4.3 Interconnected observations

In considering the themes described above, it became apparent that while they have a distinct role in addressing the study objectives, further abstraction of the data revealed two key interconnecting concepts, namely "culture" and "changes to nursing practice". This provides a more contextual understanding of the place the three themes hold in the practice of pressure ulcer prevention.

4.3.1 Culture

Each theme incorporates a component of culture, figure 4.1 identifies codes from within each theme that appeared to relate directly to the idea of culture as a driver of pressure ulcer risk prevention practices. It became apparent during the conversations with RNs that culture was being described without using the word. They spoke about the way their organisation behaved and how it impacted their performance in relation to all aspects of pressure ulcer risk management.

Within theme 1, the idea that learning and training affected the way nurses perceived risk was linked to the culture of learning within the organisation. Changes in staffing practices have affected the availability of education opportunities.

"*you know, with 12 hour shift's there isn't that scope for education on the ward… no one thought about that when they (the organisation) started 12 hour shifts*" **[B3]**

Furthermore, when education is available, whole staffing groups are excluded because they can't be released due to understaffing. RNs are failing to be able to access training because there are insufficient RNs available to cover the clinical workload.

"It's the HCA's that get the training and that's great, but we don't know how to guide them anymore because we can't get off the ward (to go to training)" **[D2]**

Learning from practice is also affected by what is perceived to be cultural norms. When pressure ulcers do develop on a patient, investigations are completed. These should inform changes to practice that help to improve, however...

"we have policies coming out of our ears at the moment and we're still getting it wrong… we do investigations, but it takes 6, 8, 12 months to come out by which time half the staff have probably gone... we need learning prioritised in real time" **[C1]**

Without an effective culture of learning, participants felt like things would not improve. If only small numbers within a team had access to opportunities or the ability to apply that learning was impeded, practice improvement stalled. The learning culture of the organisation was an important thread within theme 1 but was also linked to how culture affected risk related decision making.

Theme 2 describes the beliefs that individuals hold with respect to how risk assessment is approached, and decisions made and the practice norms that were identified describe a cultural approach to care that is not necessarily based on individual risk. One nurse described a tension between the cultural norm that all diabetic patients should have heel offloading because they are a high-risk group.

"*Well sometimes the patient doesn't fit the protocol. For example, all our patients are diabetic; they're not all high risk*" **[D1]**

While other team members adopt a standard approach to care for certain patient groups because they have seen the same decisions made by other colleagues repeatedly.

"I heard him hand over and say this patient's end of life and they don't need turning anymore" **[B2]**

Those cultural norms are also different for different team members. In relation to one particular colleague, D2 spoke about repeated failures to identify patients at risk because it was not part of their role in their home country to provide personal care and inspect the skin. On the occasion described he failed to identify a deteriorating pressure area on 2 consecutive days.

"he's a Spanish nurse and their culture's really different" **[D2]**

There are concerns with the way that practice has developed due to understaffing, high patient acuity and role boundaries between RN and HCA becoming blurred. Risk assessment is not necessarily being conducted primarily by the RN but instead they are making decisions based on the assessment of others. There have been both positive and negative experiences cited by participants leading to statements like:

"I'll only trust so many people" **[B2]**

"I can absolutely trust their (HCA) assessments because they've been trained" **[A2]**

"I can't trust that other people have done the job as well as I would but you have to, there isn't enough time to do it yourself" **[D1]**

Theme 3 describes the organisational approach to risk and how it can shape the practice of risk prevention based on drivers extrinsic to the individuals responsible for implementing risk reduction:

"*Cos the risks are so high, not just the personal risk with it going wrong but if you get something wrong the risk to the trust is huge isn't it. So they do everything in their power to minimise their risk. And by doing that I think they're reducing nurses using their autonomy, their instincts, their intuition. Which is I think a massive part of nursing*" **[C2]**

Risk assessment practices were described to be poor as a result of the organisations approach, there is a tick-box mentality that nurses adopt in an effort to keep management happy.

"They just tick off what they've seen before (on previous risk assessments), they haven't actually looked at what's happening and documented it from afresh" **[B2]**

"it shouldn't be about having to do something so that we tick a box. And were in danger of doing that" **[A4]**

"I think were becoming, were just box tickers. I don't know, I think you're wasting your training, you're taught how to assess patients and you're taught how to, you know, I just don't think you give the care, I don't think, and also you just spend an awful lot of time sat down ticking boxes on paper or a computer. Whereas actually if you were there looking at your patient, turning your patient, taking the obs, doing all of that, then you'd know that anyway." **[C2]**

Culture, being the way that a groups values, beliefs, knowledge and understanding about how they approach a particular situation, is clearly important in pressure ulcer prevention. Participants have spoken about standardisation, the role of guidance, the importance of knowledge, skill and empathy in helping them to make decisions about risk. What is unclear from the data obtained is just how congruent the perceived cultural difficulties are with the delivery of best practice in pressure ulcer prevention or how consistent that culture is across the large organisation where this study occurred. What is clear is that the organisation, environment, context, people and practices that surround an RN and the role they fulfil impacts on their behaviours and those of their colleagues in terms of risk assessment and risk prevention.

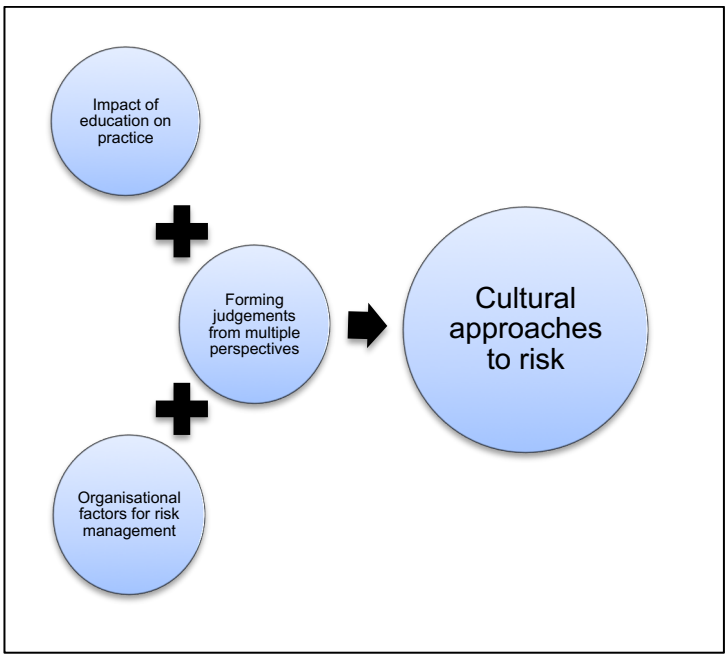

Figure 4.1: Culture

4.3.2 Changes to Nursing Practice

Figure 4.2 illustrates codes that gave rise to each theme, but remained suggestive of the fact that nursing roles are changing and that this directly affects the way that RNs practice risk management:

> "*I think the nursing role has changed… it's so documentation focussed… band 2s are becoming more like Registered Nurses and Registered Nurses are almost crossing over into doctor land now*" **[D2]**

In all clinical areas with the exception of planned surgical admissions, RN's referred to the impact that skill-mix has on practice. They referred to unregistered nursing staff being an increasingly utilised part of the team for pressure ulcer prevention care and an increasing reliance on them to be able to act independently:

> "*I think training the auxiliaries and the HCAs to be the experts in skin care and things has been a brilliant, because we do rely on them a lot more than we have done before… And we learn from them as well sometimes as well don't we cos they've had that close contact with the patient already and already started making that assessment for you*" **[A3]**

It would also appear that where there is mention across the themed areas about changes in nursing, what is described in terms of the process of nursing also appears to differ from that of what nursing theory tells us, this is blamed by participants on a wide variety of pressures including lack of training and effective role models, the lack of time available for both good assessment practice and the cognitive processing of assessment information and the impact of skill-mix, staffing and organisational pressures. Instead of a structured approach of assessment, planning, implementation and evaluation according to conventional nursing, these steps appear to happen out of sequence. RN's report a more fluid approach to identifying needs and providing care; the care provision by unregistered nursing staff is often done before an RN first assesses the patient and determines what that care provision should be. The formal planning and evaluation phase of the nursing process is excluded from the reports that nurses provided. They cite time pressures, changes to practice and changing roles as a range of factors that have influenced this:

> "*Time management factors that causes people to be sat out for too long in the chair, when say they should only be sat out for an hour, 2 hours, things happen, people forget, they've been sat there for too long, they've not been stood, they've not been popped back into bed or cognitively, 'I'm not moving, I don't want to go to bed'. And you'll have some auxiliaries who aren't too experienced or don't want the confrontation*" **[B2]**

These changing nursing roles bring about ideas of power, control, hierarchical systems and the difficulty associated with marrying professional identity with the operational needs of a large organisation.

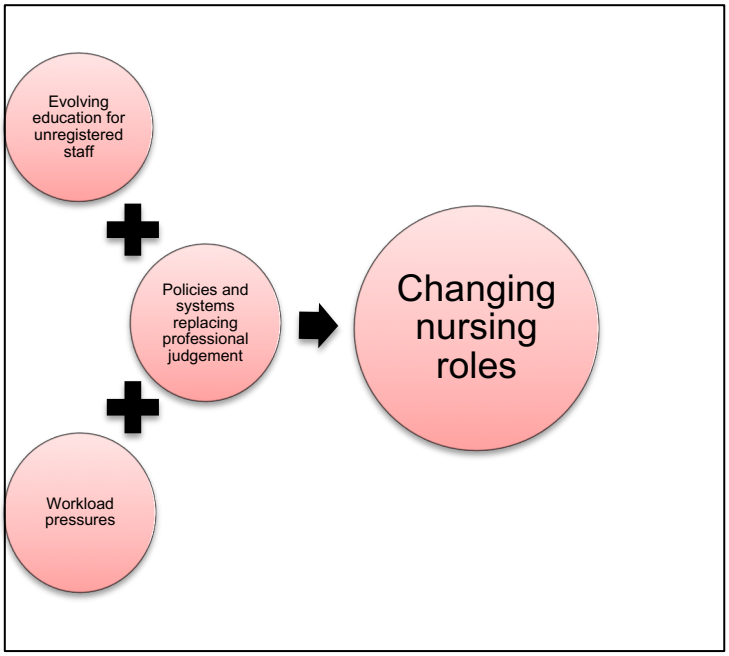

Figure 4.2: Changing roles

In the traditional model and the one expected by local policy (Price, 2017), the RN controls the process of risk management in the patient care area. With regards pressure ulcer prevention, the expectation is that they undertake a patient assessment and correlate that with the completion of a risk assessment tool that they also complete. They determine the level of risk, plan the care and evaluate its effectiveness. While they are encouraged to be involved in care delivery, this is the only part of the process that unregistered nursing staff are formally identified in. The process outlined in figure 4.3 is based on the policy for the organisation but was also highlighted by study participants as what they “should” do. It is a systematic, consistent and reliable approach that requires each step to be followed sequentially and where roles are clearly defined.

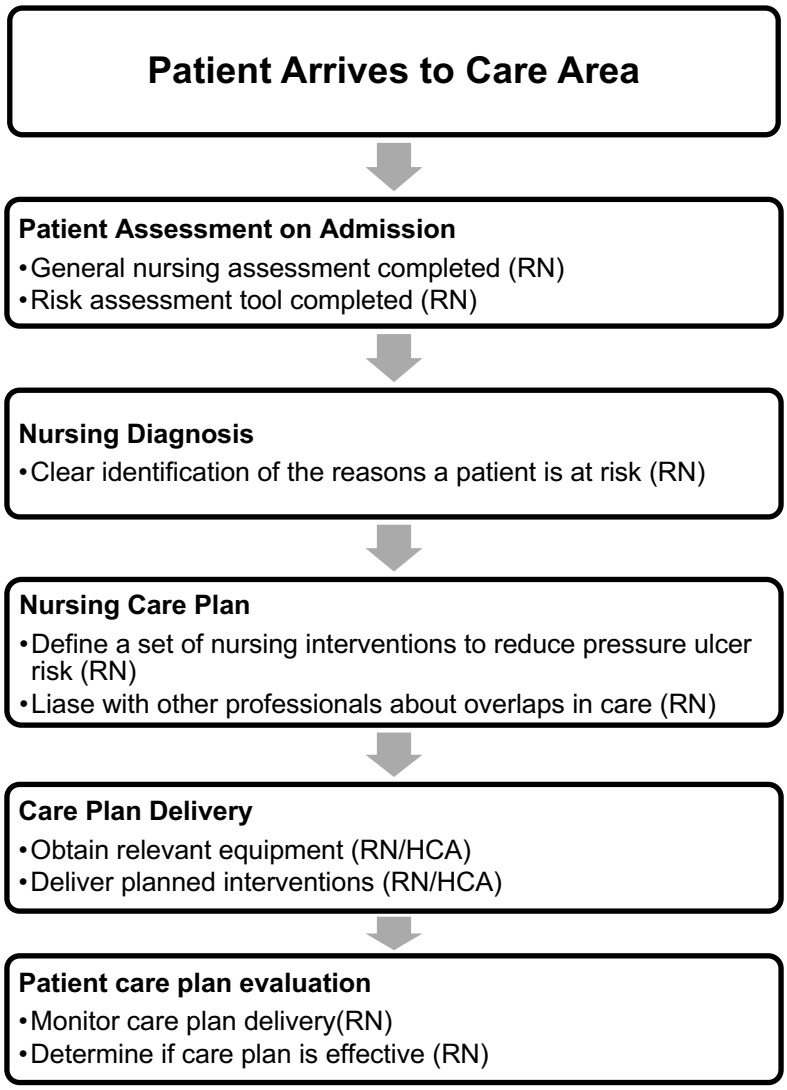

Figure 4.3: The nursing process for pressure ulcer prevention

The reality according to the participants in this study is that the process is far more complex and the RN is not as central as policy would dictate. Figure 4.4 illustrates the level of complexity that arises. It is not linear; it has multiple opportunities for variation in what the next step is and who undertakes that step. Each box is a potential outcome, each red box indicates a point in the process that those interviewed acknowledged as required steps in the process that do not always take place, despite being mandated in policy. Much of the process is delegated to unregistered nursing staff despite RNs feeling that they should remain responsible for this care, they felt they did not have the time available to achieve what was expected of them.

> *"Of course, everyone on a ward is busy doing a lot of things, we have emergencies, we have new admissions that should not happen … you should not dragged out from your work…"* [B1]

Some RNs also did not see the value in certain steps, completion of a risk assessment tool for example was seen as an ineffective use of RN time, favouring clinical judgement as a method for determining risk.

> *"I think the Waterlow is not an effective… well it is an effective tool but it's not that accurate and I think A4 is right (do not use a tool in isolation); you need to join the two. So the Waterlow's a starting point but there is often patients that don't score that you would still class as more vulnerable."* **[A2]**

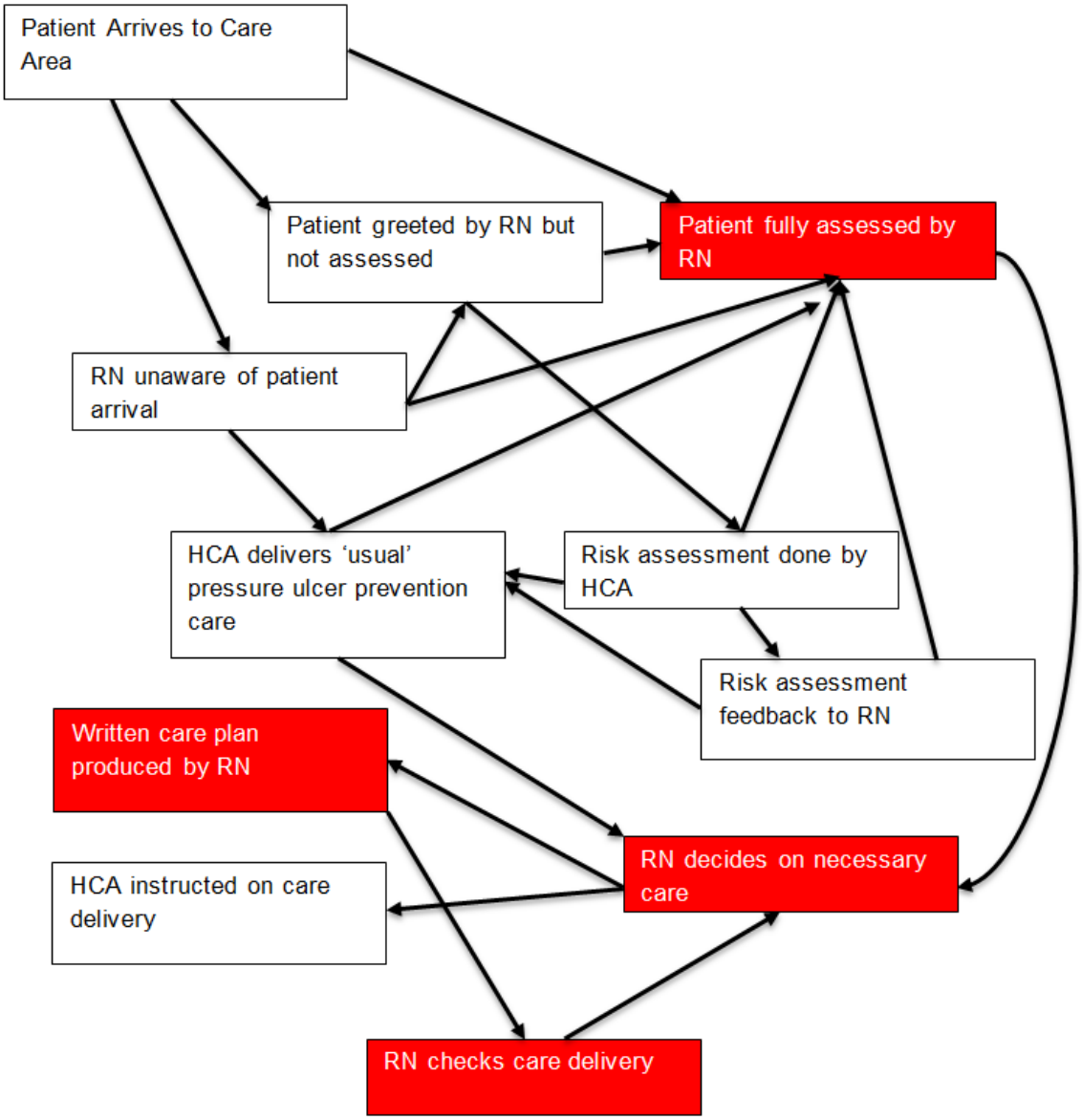

Figure 4.4: Reported process for pressure ulcer prevention

The changes to the role of the RN and the processes described that result from those changes has affected the way that risk assessment occurs. Different roles now undertake risk assessment. The standards of practice that apply to RNs have not necessarily been

applied to those other roles at this time. Furthermore, by failing to account for the way that role change has affected the delivery of practice, those practices that made sense a few year ago, do not necessarily fit with the current state of nursing practice for those in this study. If new, more junior roles with less professional training and expertise (i.e. HCAs) are taking over risk assessment, should the risk assessment paradigm change? Is it enough that they are taught how to complete an assessment tool or, as is suggested by NICE (2014), is the essential application of professional knowledge missing from the judgements made about risk by HCAs?

4.4 Summary

The participants described the methods they use for risk assessment, including formal risk assessment instruments and the application of tacit knowledge in a more intuitive way that was sometimes difficult to articulate. There is some discrepancy between individuals about which approach they favour and ultimately, this dictates how they use the instruments that are mandated in their practice by the organisation they work for. This is also carried forward into how they make decisions about what to do as a result of risk. Participants described a range of extrinsic influences that affect the operationalisation of their judgements. The RNs are required to consider not only individual risk but the changing context that may inhibit their ability to focus on the at risk patient. Not all RNs seemed to be influenced by the same external factors. However, education, skill-mix and the role of the team/organisation alongside the clinical pressures of the workplace were generally acknowledged by all to influence the approach to practice of the nurse on the front line.

The major theoretical concepts that are apparent within the themes identified centre around the way the nurse translates their learning and experience into a mental model of practice which they then form behaviours around. The ideal mental model of pressure ulcer risk management (figure 4.3) and the reality (figure 4.4) are disconnected, partly as a result of cognitive biases that affect the perception of risk and partly by necessity of clinical care environments. The capabilities of the nurse to generate accurate inferences based on the clinical situation they are presented with and the background ‘noise’ affects their susceptibility to cues about heightened risk. Indeed, risk assessment and risk reduction appear to be so highly influenced by the context of practice that expecting RNs to deliver sound risk assessment decisions in the current practice climate might be extremely difficult. Instead, a more thorough consideration of the impact of human factors in relation to the collective mental model of risk might produce more favourable outcomes. The counterpoint to this is the degradation of professional autonomy and how this affects

the role of the RN and their locus control. This finding was unexpected and leads to the need to consider how the culture of the RN workforce is being affected by the rapidly evolving roles within the healthcare. Both greater specialisation amongst the RN workforce and devolution of traditional nursing roles to other members of the workforce seem to be affecting the general RN and the way they consider risk for pressure ulceration. The interconnectedness between risk culture and professional nursing culture in the context of the acute hospital environment might reveal opportunities to innovate or identify necessary application of high reliability models of practice to ensure consistency.

5. Discussion

Risk assessment is inherently part of our practice as RNs, but the challenge with risk assessment is that if it is not conducted correctly, or the approach is fundamentally flawed, it is an unhelpful exercise. This study has attempted to understand how nurses conduct risk assessments for pressure ulcer prevention. Further the study sought to determine if there is an explanation for how nurses assess and manage risk that goes beyond the use of risk assessment tools. Section 4.2.2 describes an uneasy relationship between formal and informal risk assessments. Section 4.2 and 4.3 describes the way that RNs in this study feel that both intrinsic and extrinsic factors influence their ability to do a good job, to do what is expected of them and ultimately to provide safe and effective nursing care. This study has used 1 focus group and 9 individual interviews to identify themes in practice; the discussion will extrapolate the theoretical concepts that help to explain nursing practice.

The findings presented in the previous chapter highlighted three themes:

- Learning and training opportunities influence the way nurses perceive pressure ulcer risk and respond to triggers;
- Decisions about risk in pressure ulcer care is influenced by conscious and unconscious cognitive processes;
- Organisational and workforce factors contribute to a theory practice gap.

Each of these themes raised questions for practice that centred on how and why nurses respond to information about patient risk in pressure ulcer prevention and subsequently make decisions. From the literature review, the idea that mental models and situational awareness are intrinsically linked and able to explain how RNs view risk and respond to it seems congruent with the practice described in this study. This chapter will consider how mental models are formed and why behaviours arise as a result of the RN's exposure to theory and practice. The capabilities of the nurse to generate accurate inferences is based on the clinical situation they are presented with and the 'noise' that affects their susceptibility to cues about heightened risk. The impact of human factors on the operationalisation of the application of risk assessment and response to patient needs also seems to be confirmed by the reports of RNs. Consideration will be given to the paradigm of risk assessment as a way of triaging patients for level of intervention versus the application of high reliability bundles of care. While the role of culture was considered in chapter 2 in the context of risk, the extent to which professional roles and autonomy affect the practice of RNs in this study was not anticipated and was an unexpected finding. This chapter will consider, in relation to the reports of the participants in this study,

how changing roles and responsibilities affects risk culture and the delivery of care and how that risk culture leads back to affect the mental models of risk prevention practice.

Figure 5.1 illustrates the areas highlighted from the findings of this study that will be discussed in this chapter. The blue boxes illustrate theoretical concepts that will be explored, these are areas that have the most potential to influence in order to improve risk assessment and prevention practices at the level of an individual RN. The black lines illustrates components identified by participants as having some influence on the way they view practice. The mental model will either be accurate/positive, or inaccurate/negative, towards pressure ulcer risk. Depending on the practice context, either positive, negative, or neutral outcomes will be likely. Positive outcomes are not necessarily just the prevention of pressure ulcers, but the sense from respondents is that this is much more about how RNs feel about their practice. These outcomes suggest proactive approaches. Likewise negative outcomes are not just about failing to assess risk and prevent pressure ulcers but also reflects the culture and approach to risk at an organisational level. It is suggested here that the risk culture produces a level of resistance that is counterproductive. Neutral outcomes seem to be more concerned with getting things done because they need to be done. In this sense, they are considered cooperative with the goals of their organisation but may not represent true cultural buy-in. Despite the practice context, there seems to be an opportunity to address human factors in order to improve the decisions that RNs make about pressure ulcer risk assessment and prevention. If this final opportunity is exploited, it might be possible to improve the cultural approach to risk in the future and positively affect the mental model of risk each RN holds.

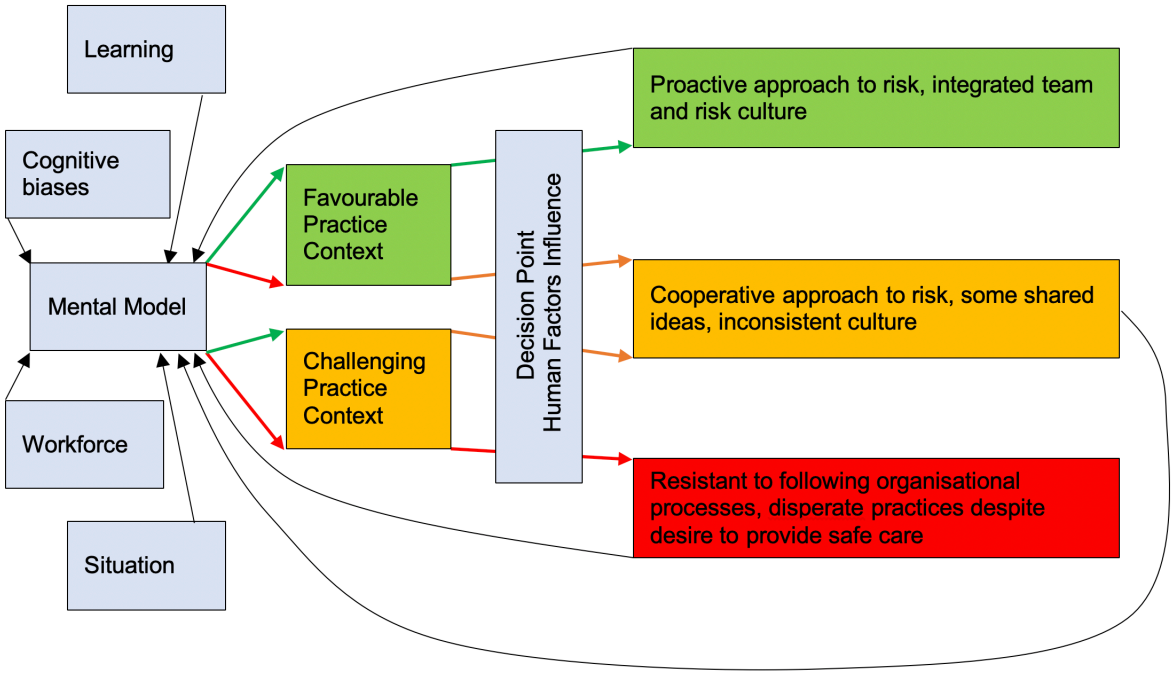

Figure 5.1: Concept Map

5.1 Mental Models - formed from perceptions of risk and risk prevention

For the purpose of this discussion, mental models are being considered in both the context of an individual internalised model of pressure ulcer risk and one that is culturally informed and potentially shared by those around the participants interviewed. The mental model of risk prevention reported by participants illustrated an incongruence between what they perceived to be best practice (figure 4.3) and the way that they actually delivered pressure ulcer prevention care (figure 4.4). The mental model they hold tries to bring together their personal concept of pressure ulcer risk with the risk culture and processes of the organisation. How things are and how things should be has to be reconciled by the RN in order to form a pragmatic view of pressure ulcer risk assessment and prevention. They then have to make choices about how to act, sometimes in spite of their own mental model. Figure 5.2 illustrates the disconnect between what is perceived as reality (how things are, the realist perspective) on the left of the diagram and what is held as a model of what is best (how things should be, the idealist perspective) on the right of the diagram. The gap between beliefs about “how things are” and “how things should be” helps to generate the mental model.

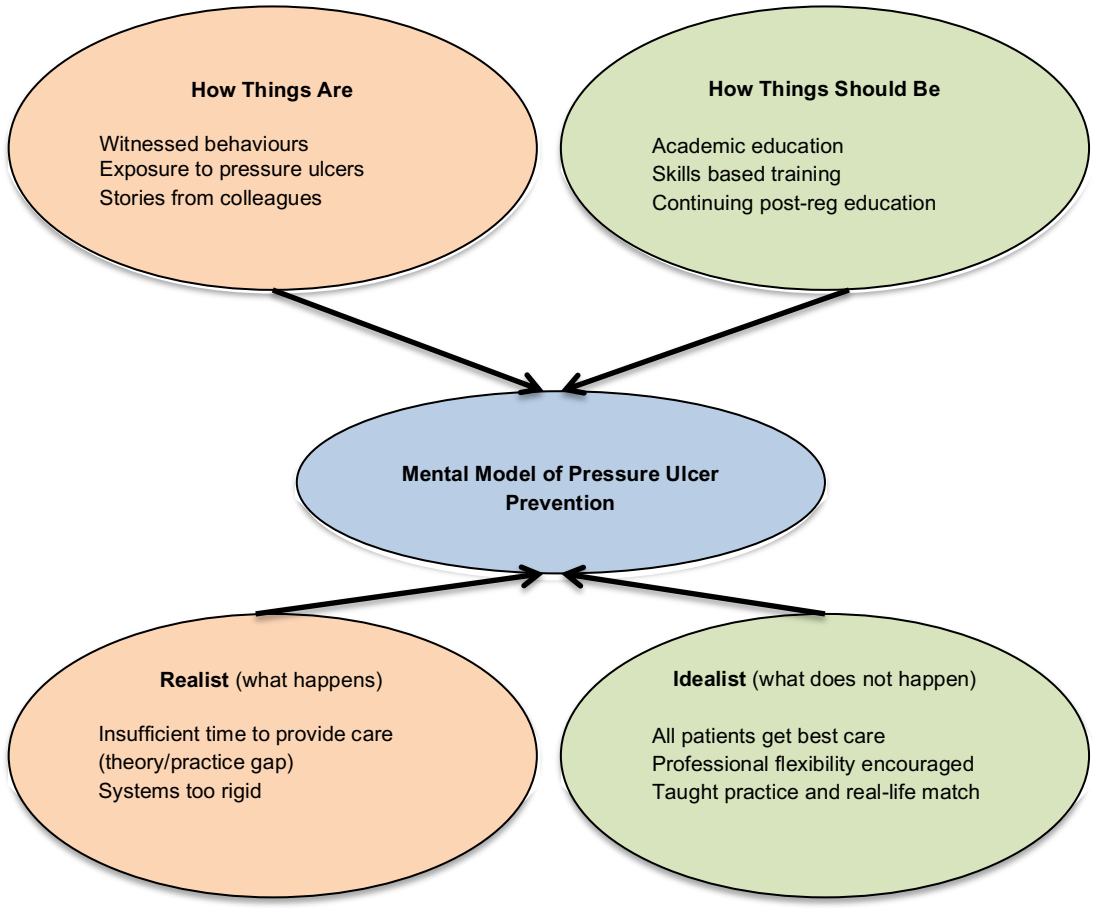

Figure 5.2: realism vs idealism in the mental model

RNs in this study have described a mental model that is split between these 2 perspectives, they have a mental model of pressure ulcer risk that tells them how they should behave (based on training, education, workplace policy and procedure) but they have a conflicting mental model based on the realities they witness during their working day. The actions that result from this conflicted mental model of pressure ulcer risk may be highly variable and depend on the pressures of the clinical environment on any given day. For all the nurses interviewed, pressure ulcer prevention care was viewed to be a fundamental component of nursing care that is considered as a high priority area of intervention in the mind of the RN.

> *"I think that pressure area care is the most important"* **[D2]**

> *"We've always done, obviously done pressure area care but it's never been such a high priority as it is now."* **[A3]**

Their mental model of what pressure ulcer risk assessment care looks like is varied and heavily influenced by the practice environment they work in. For example some RNs

strongly advocate for the use of a risk assessment tool as the first step in risk reduction to standardise the mental model and ensure consistent practice.

> *"I obviously do use it because it's the only tool we have… it gives us a standard way of doing things... it's a way of being able to pick up these people who don't perform to the same level as better members of staff… some aren't as competent or confident"* **[C1]**

> *"it gives sort of a formal consensus about what this patient is like... so use that (Waterlow) as a baseline"* **[B2]**

While others treat the risk assessment tools either with some mistrust or as something that is done to complete a mandated procedure. The risk assessment tools seem to fail to meet their own mental model of risk and risk prevention practice. Instead, they their own individualised model of risk to inform the decisions they make.

> *"I don't find the Waterlows are a very good way of assessing"* **[A2]**

> *"Because that piece of paper (risk assessment tool) cannot see what I see"* **[B1]**

> *"I think that most of the nurses on our ward are experienced enough and informed enough that the Waterlow score might come at the end of our shift and we've already done the prevention throughout our shift naturally just by knowing the patient and by knowing their medical history and everything else and by looking at them like you said."* **[A3]**

Participants reported a range of factors that can be explicitly linked to the mental model they hold: learning opportunities (pg. 66-69, 91), impact of role models and leaders (pg. 69), personal experiences (pg. 69, 70-73), situational context including the barriers to practice generated by workload and organisational pressures (pg. 75-78).

Some participants referred to their own attitudes and beliefs about pressure ulcer prevention as a component of their nursing care (pg. 79-83), others voiced opinions that may be the basis of a bias towards or away from prescribed methods of risk assessment (pg. 71-72, 77, 88). In the present climate, we have to accept that formalised risk assessment is here to stay (Sears et al., 2017). However, if we can better understand how the mental model form and influences behaviour, attitudes towards risk and the prioritisation of pressure ulcer prevention can be influenced. Perhaps the application of

formal risk assessment can become more meaningful and lead to better patient outcomes (Lathrop and Ezzel, 2017).

Attitudes about an idea or behaviour form because the individual who has that attitude has made an affective evaluation about its value (Ajzen, and Fishbein, 1977). The theory of planned behaviour (described on pg. 22) proposes that attitude has a direct influence on the behaviour that an individual exhibits (Ajzen, 1991). This theory, and those that are based on its central concepts, all take an attitude as a causative factor on the resultant behaviours. Cause and effect is unidirectional and predicated by the strength of the attitude about a given situational/behavioural intention. Indeed, it was expected that during this study, there would be a direct causative relationship noted between what participants felt about pressure ulcer risk and how they behaved. Instead, participants described a disconnect between the attitudes they reported and their ability to exhibit the logical set of behaviours to minimise risk. Dalege et al. (2016) suggest that the cause/effect relationship between attitude and behaviour is a more complex set of interactions that influence the extent to which attitude produces action. Factors such as individual and shared beliefs within a group, perceptions about previous experience of the subject in question and the ability to generate cognitive links, all influence the extent to which an attitude is conceptually adopted.

The number of cognitive links drawn between the attitude and behaviour, the number of barriers perceived and steps involved in making those links, will all give rise to difficulties in making causal connections. This cognitive dissonance, described by Festinger and Carlsmith (1959), is something which study participants have struggled to overcome.

> *"…we strive to have a zero tolerance for pressure areas"* **[A4]**

> *"…there are time pressures rather than a lack of compassion and wanting to do well"* **[D1]**

> *"as everywhere, [we are] short of staff, short of staff goes to poor quality care"* **[B1]**

Participants report an attitude of low tolerance for pressure ulcers, patient harm that is avoidable in most circumstances, but a tolerance of the behaviours that predicate pressure ulcer formation. This inconsistency appears to be at the root of the dissonance that participants illustrated between what ought to be done and what is done. They have a mental model of what good practice looks like and a reported attitude that suggests they should be able to deliver this. However, the reality they report is one more aligned to a

mental model of risk they feel powerless to deliver on because of circumstance. RNs are being challenged to deliver pressure ulcer risk assessments by the organisation, yet some do not necessarily believe that the risk assessments themselves are of sufficient value and therefore do not use them as an assessment tool but instead to appease the requirements of the organisation.

"*people rely too heavily on that score*" **[C1]**

"*I think if you just left us alone, globally, left us all alone to do a 'Roper, Tierney and Logan' type assessment, that to me would be far more beneficial to the patients*" **[D1]**

"*I don't find the Waterlow's particularly very helpful. It's a starting point, but you can be misled by results from Waterlow*" **[A4]**

This attitude towards risk assessment tool use appeared to be heavily influenced by the perceptions nurses held about the situational context:

"*you don't always get to it because you don't always have the time to do it*" **[B3]**

"*So there are time pressures rather than a lack of compassion and wanting to do well*" **[D1]**

"*So we're having all these things thrown at us and I do think that there's less time to do them*" **[D2]**

"*having too many patients for one RN*" **[B2]**

"…*because were always short staffed*" **[B3]**

"…have we got enough pairs of hands on the ground to actually deliver the care that we know patients need?" **[D1]**

The sense that they are overwhelmed seems to contribute heavily to the way their mental model informs the delivery of nursing practice. Because their behaviours do not meet their mental model, a cycle of despair about the situation seems to be evident and with that, a dwindling ability to effectively prioritise pressure ulcer risk assessment in its current form.

Thøgersen (2006) suggests that where behaviours are required due to lack of car ownership necessitating use of public transport, attitude towards that behaviour (public transport use) becomes more positive than during the previous state when the participants did own a car. Thus, behaviour causes a positive change in attitude. If pressure ulcer prevention behaviours are enforced by circumstances, the assumption is that while those circumstances prevail, the attitude towards the behaviours will become more positive. Participants have reported that since pressure ulcer prevention has become a more prominent concept in the daily business of healthcare, they have become more aware of the need to be proactive. One group reported engaging in a pressure ulcer prevention work stream.

> *"And I think that's what's focussed the zero tolerance so we're a bit, uhhh, this man's got a grade 1, you know cos we haven't had any pressure and we are bit like oooh, what have we done what haven't we done?"* **[A4]**

This appears to have created a positive feedback mechanism.

> *"Leading by example. Make a positive thing by addressing the negative thing"* **[A2]**

As a result, this group of participants reported a significant improvement in their risk assessment rate, pressure ulcer incidence rate and appropriate equipment usage. This fits with the concept map in figure 5.1, addressing a number of inputs to the mental model alongside a more favourable practice context where positive behaviours are encouraged, actually improves outcomes and reinforces a more positive mental model.

Kroesen, Handy and Chorus (2017) have studied the bidirectional influence that attitude and behaviour have on each other. Their study examining behaviours and attitudes towards different travel modalities demonstrated that while positive attitudes towards a given behaviour precipitated engagement, behaviour influenced attitude more strongly over time, establishing a positive feedback loop. This supports the findings of Thøgersen (2006), suggesting that the more a person engages in a given behaviour, the stronger their attitude towards it is.

Kroesen, Handy and Chorus (2017) acknowledge the problem with trying to mandate particular behaviours and attitudes, suggesting that this can actually establish negative approaches to the issue in question. However, they observed that when people's behaviours changed, attitudes were more likely to adjust as a result. This has been reported in our own pressure ulcer prevention study. People's attitudes have started to adjust to a reality of 'less than perfect'. Accepting 'less than ideal' is becoming a real-world

method of downregulating expectation and will ultimately result in acceptance of poor practice if it remains unchallenged.

"*…because you can't be everywhere at once…"* **[A4]**

"…that's not something we can leave (patient being left in one position) …" **[B2]**

To better understand the impact of attitude on behaviour and vice versa, each component in the risk reduction process (assessment of risk factors, formation of a judgement about risk level, choice of mitigating measure and implementation of risk reduction plan) needs to be considered. There is evidence from this study that the attitude about pressure ulcer formation, and the impact on patient outcomes, elicits a desire to behave in a certain way. However, a range of factors, such as role, time pressures and staffing availability, interrupt the flow of cause and effect in the attitude/behaviour cascade.

"*my role in this hospital, in this world probably is to serve my patients*" **[C1]**

"*So, there are time pressures rather than a lack of compassion and wanting to do well*" **[D1]**

"*as everywhere, short of staff, short of staff goes to poor quality care*" **[B1]**

The interviews in this study have highlighted a degree of dissonance, a cognitive clash between the outcomes staff desire and their feelings about how capable they are in the circumstances to deliver. The extent to which each aspect of attitude and behaviour interrelate remains unclear.

Attitude and behaviour are not only an individual construct, it appears that an individual's approach to risk is also heavily influenced by others as is evidenced by the collective mental model described above. Several nurses in this study described the way that new staff mimic what they observe, or pick up habits from working with less effective individuals. The impact of access or lack of access to training has also been described as an important component. Our experience is built from both the actions we take and those that we observe (Bandura, 1969).

"*we learn from the problems that we've had. I say, you don't ever forget and you do learn*" **[A4]**

This social learning theory developed by Bandura (1969) is the basis of role modelling approaches in clinical practice. The inference here is that the actions of others will also

help to shape the mental models we form in relation to pressure ulcer prevention practices. Role models provide us with an observable reference on which to base our own behaviours in relation to a specific context. We then use that as the basis for future behaviours. Effective role models that behave in a way that promotes the desired behaviours can be an essential component in helping nurses to pick up good practice habits. While ineffective role models, or role models who behave in a way contrary to the desired outcomes, may provide nurses with less favourable cognitive inputs and result in poor attitudes and actions being exhibited (Felstead and Springett, 2016). There is ample literature in nursing to support the notion that role models are an important part of experience building (Vinales, 2015; Nielsen, Lasater and Stock, 2016; Jack, Hamshire and Chambers, 2017). Doherty (2016) identified role modelling as a teaching strategy in its own right to help establish a firm practice-based knowledge and skill set in junior emergency department nurses. While this is acknowledged in the field of pressure ulcer prevention (Gill, 2015), there are no studies that directly evaluate the impact of role models in achieving improvements in pressure ulcer prevention targets.

The interviews conducted by Jack, Hamshire and Chambers (2017) helped to illustrate the feelings that students had about the attitudes and behaviours of the people they worked with. When students had role models who exhibited a positive attitude towards practice, the level of professional and clinical competence the students perceived was higher, than perceived regarding those who exhibited more negative approaches. These perceptions were translated into a desire to replicate the attitudes and behaviours the students perceived to be more positive. Clark and Holmes (2007) illustrated a tension between new RNs and their mentors/mangers. The new RNs felt that too much was expected of them and their managers held the perception that their new RNs would be ineffective and so had very low expectations of their clinical competence. Watson (2006a) described difficulties with this as clinical staff become less able to dedicate the time to support junior staff and students as they rush to achieve an increasing workload, unintentionally appearing distant, dismissive and uncaring. In this context Watson (2006a) describes an absence of effective role models resulting from the impact of the environment, in its most damaging form, this translates into negative role modelling where individuals may adopt bad habits because those are the behaviours that are witnessed.

Donaldson and Carter (2005), using a mix of focus groups and interviews, explored the perceptions that student nurses had of those who provided mentorship to them. Consistently, students reported that they witnessed both good and bad nursing practice.

Their study findings suggest that there are some key things that are important in generating an attitude or behaviour:

- The frequency with which a behaviour or attitude is witnessed
- The extent to which replication of the behaviour or attitude is encouraged in practice (or discouraged if it is undesirable)
- The intrinsic and extrinsic motivators for the learner

If these three things are considered, the person acting as a role model will be better able to maximise the benefits of the time they spend with others. In the context of pressure ulcer prevention, this would require the role model to exhibit a positive attitude towards the assessment of risk – something which was lacking at times according to the participants in this research study.

> "*But then newer auxiliaries who've been around the Spanish nurses perhaps don't [observe good practice]. And that's where that influence titrates down and becomes dangerous*" **[D2]**

While more knowledgeable and effective role models will provide benefit to the team by challenging poor practice and reinforcing good practice, it fails to address the multifactorial aspect of the mental model. It is clear from the participants that their mental model of what constitutes pressure ulcer risk is affected by the education and training they have received.

> *"I don't think there's as much learning; you know specified courses out there for them or modules out there for them as there were... with 12 hour shift's there isn't that scope for education on the ward"* **[B3]**

It is also apparent that the focus of training for this aspect of risk prevention is being shifted to a different staff group as workloads increases for RNs.

> *"training the auxiliaries and the HCA's to be the experts in skin care and things has been a brilliant, because we do rely on them a lot more than we have done before"* **[A3]**

It's is highlighted how much nursing practice has changed and how much more pressure there is resulting from increased workload on RNs and the resulting impact on their ability to apply their mental model.

> *"I think the stress and the work that have been put on the individual nursing staff, all of them but the registered being far more accountable and having far more to lose, their stress level is higher, I think that those stress levels have been*

increased enormously, almost, almost to the point of it not being able to increase anymore." **[B3]**

"I think sometimes the knowledge is there but the workload is so high that you can't apply it sometimes" **[A1]**

The mental model that RNs hold therefore extends beyond their own conceptual understanding of risk but is intrinsically linked with the context in which they practice. Regardless of the RNs concept of risk, the mental model of practice they hold may prevent mitigating actions and be regarded as ineffective nursing practice.

The RNs mental model is held by individuals but influenced by a range of factors including education/training, the prevailing practices in the workplaces, the competence of colleagues, their colleagues mental model of pressure ulcer risk and the operational pressures that present. The RNs in this study identified practices that were not informed by evidence but driven by necessity and resulting in what they felt at times to be poor patient care. This arises because of their failures to directly assess their patients risk and ensure adequate risk mitigation practices. The mental model that RNs hold therefore extends beyond their own conceptual understanding of risk but is intrinsically linked with the context in which they practice. Regardless of the RNs concept of risk, the mental model of practice they hold may prevent mitigating actions and be regarded as ineffective nursing practice.

Despite the population focus of this study being the RN, it is important to note that RNs consistently reported greater involvement of HCAs in the pressure ulcer risk management process. HCAs are increasingly the ones undertaking assessment, making decisions and implementing interventions. HCAs are receiving more and more training according to the participants and this is welcomed however there remain concerns about what that training entails and whether it equips them to practice to the standard necessary to make sound risk assessments, decisions and plans. There is a gap between practical ability required by the HCA and the training required to understand the broader context and apply higher levels of critical thinking expected of RNs.

"The HCA's are doing the vast majority of the washing dressing, rolling, moving of patients and so it's essential that they know how to do things properly... they have the practical skills of doing the turning and checking the areas and knowing what they're looking for to then report back" [B3]

"I don't know if we could just, you know, let them (HCAs) get on and do the risk assessments without a lot more education, they don't know what they don't know and so you might get them thinking everything is ok when in actual fact someone is really high risk because of how their medical condition affects them, it's not fair to expect them to take that responsibility especially if a patient develops a bed sore because of it" [D1]

But despite these consideration, HCAs are undertaking risk assessments, are delivering care and are making decisions about who needs pressure ulcer prevention out of necessity.

"They cover this (risk assessment) without us when it comes to it if we need them" **[A3]**

"you delegate, you delegate and hopefully you're working with a damn good team who'll come to you and say, will you have a look at this" **[B2]**

In any further studies about staff involved in pressure ulcer risk assessment and prevention practice, it is essential that the HCA is included. If they are increasingly taking on roles and responsibilities of things previously assigned to the RN, the mental model they hold and where the key influences for that mental model come from need to be better understood.

In this study, RNs have identified mandated practices as unsuitable and ineffective, partly because of the wider context. They practice in a particular way because of circumstance despite their knowledge at times, this reinforces their mental model that risk assessment and prevention is difficult to deliver, this is further perpetuated within the social and environmental context, supporting the formation of habits (Sullivan, 2006). Indeed these habits, described by Power (2004) may lead the individual to become blind to emergent risk as they are novel and not allowed for within the individuals mental model and so more direction of their practices may be necessary.

Rather than direct challenge to ineffective practices, or undesirable attitudes towards risk, Thaler and Sunstein (2008) suggests that applying a "nudge" in the right direction is more likely to produce sustained behaviour change. Nudge theory, applied widely in politics and economic and more recently in the health sector (Pedwell, 2017), asserts that attempting to mandate behaviour change, particularly in complex systems is likely to produce the opposite effect.

A “nudge” is a way of guiding individuals and groups towards the desired behaviour without explicitly asserting that individuals or groups should or should do a particular thing (Thaler and Sunstein, 2009). This is achieved by indirectly affecting behaviour change, by addressing environmental, social and process related components that reinforce the undesired habit and instead provide a context in which it is easier to exhibit the desired behaviour than not. By establishing a new more positive habit, the mental model will in turn be adjusted to accept the new subjective norm. “Nudges” have been illustrated as effective change methods, however, require careful thought about both the problem they are trying to solve and the reason the problem exists. Patel (2018) describes a ladder of nudges (figure 5.3) whereby providing information is the least intrusive intervention and providing default options to heavily influence choice the most aggressive, but arguably the most effective. The steps in between describe, with examples, how the escalation, the idea being that the appropriate step on the ladder is chosen based on the context the nudge is needed to be applied in.

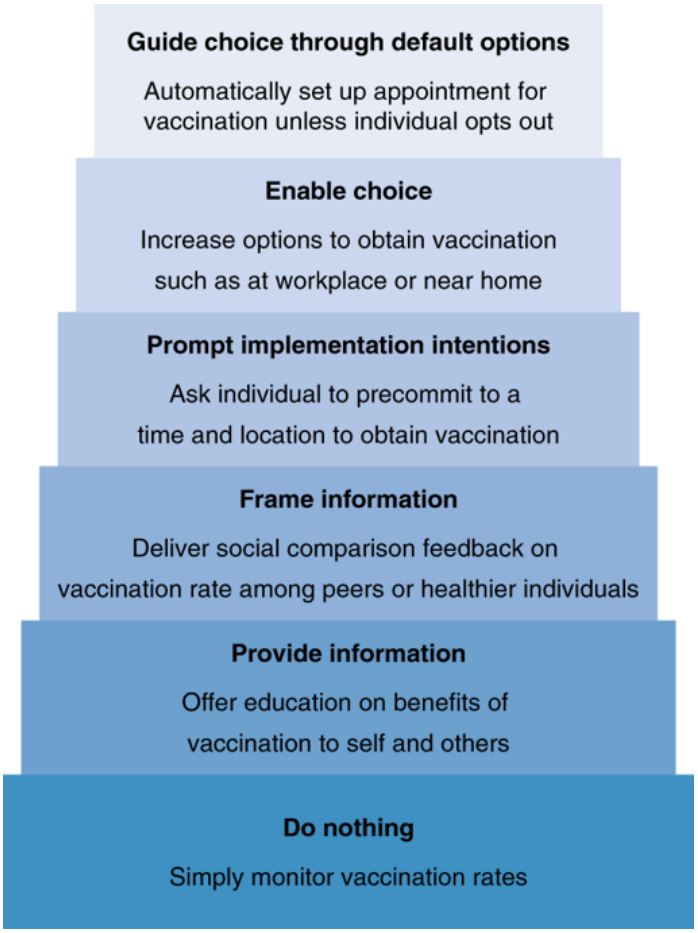

Figure 5.3: Ladder of “nudge” intervention (Patel, 2018)

Caris et al. (2018) demonstrated the ability of prompts in the form of posters at hand hygiene stations as an effective method in overcoming the availability heuristic, described as how prominent the decision is in the mind of the clinician. The study illustrated an increase in hand sanitizer use compared to a control group where the “nudge” posters were not in place. This is lower on the intervention scale, simply providing information about why hand hygiene was important. Van der Linden, Clarke and Maibach (2015) described the use of information framing and communicating professional consensus to improve attitudes towards vaccination. They did not illustrate how this attitude “nudge” actually translated into vaccination rates. Milkman et al. (2011) described a study evaluating the impact of mailed reminders for flu vaccination dates. This prompt for implementation intention is high on the intervention ladder though their study illustrated only a 1.5% increase in vaccination rates. Where the subjects were also asked to note a specific time, this vaccine rate increased to 4.2%. This mildly positive bias toward vaccination created by intention aligns with the theory of planned behaviour (pg. 22). Chapman et al. (2010) illustrated higher vaccination rates by changing the default option to be vaccinated and people having to actively opt out of a vaccination programme. Similar opportunities have been identified in other sectors with promising results. Székely, Weinmann and vom Brocke (2016) identified an increase in carbon offsetting payments made my airline passengers when the fee was automatically added to their booking but they were given the choice to remove said fee. Biswas et al. (2017) demonstrated the effect that environmental changes in restaurant space, specifically brightness of ambient lighting, affected the choices of consumers. They were able to directly influence consumer choice towards healthy options by increasing luminescence versus having dimmer lighting.

More extensive programmes of “nudge” that simplify the processes for clinicians have been employed in hospital acquired infection surveillance. Shaban-Nejad et al. (2016) have described an automation process that highlights those patients who may have sustained this type of complication automatically instead of relying on compliance of surgeons with reporting to a database. This elimination of steps reduces the burden on individuals and consequently increases both reliability of complication identification and the time available for clinicians to investigate these cases in order to learn lessons.
Our mental model of pressure ulcer risk and prevention is something that is dynamic and can be influenced both positively and negatively by attitude, behaviour, training and practice context. This study has highlighted how each of the themes and concepts has influenced the participants’ mental model of risk (figure 5.1). The decisions that RN’s make based on those mental models are, therefore, potentially vulnerable. Each individual

RN may have their own threshold for what is an acceptable level of risk for a given outcome based on their current mental model, finding their own way of balancing what is ideal and what is realistic (figure 5.2). This leads to unnecessary and unhelpful variation in clinical practice. Instead of trying to forcibly change the way that RNs practice, developing a better understanding of the situational context of risk assessment and prevention is likely to provide greater opportunity for sustained improvements to practice. Role models who understand the context and the people they are working with, who can examine the impact of the practice conditions are likely to be able to identify areas where a "nudge" can be provided. This "nudge" might change the situation just enough to make it easier to do the right thing than not. The effect of these positive behaviours on the mental model and vice versa might help to establish patterns of behaviour change based on new subjective norms and bias the RN towards desired behaviours and attitudes.

5.2 The effect of 'Human Factors' on assessing risk and making decisions

In order to form a judgement about risk, there has to be an underlying concept of what risk means and how it relates to a situation. If the concept of the mental model is accepted as being a key component in the formation of judgments, each situation must be perceived in relation to an individual's internal model of risk. This means that patient risk factors and the resulting signals and cues the RN picks up on, must be considered to deliver accurate risk assessment and nursing care. Reliance on a purely internalised model of risk, one that relies on each individual making their own assessment without a structured framework informed by evidence, to inform judgements could lead to inappropriate variation due to subjectivity or human error.

> "*… we need it to standardise people's thoughts and feelings about a situation*" **[C1]**

> "…*I think they're useful and I do think they prompt me to remember things*" **[D2]**

Noon (2014) suggests that clinicians who have sufficient knowledge of a condition, and training in how to interrogate that situation, will be able to identify all of the relevant information on which to base a decision. However, Jensen, Resnik and Haddad (2008) have suggested that this might be too simplistic. A situation may not be as tangible and time-bound in healthcare as one might first think. Decisions about pressure ulcer prevention may vary considerably based on evolving context (Bååth et al., 2010). Clinical reasoning may require the collection of data from a much broader context and over a longer period of observation than is possible in a single encounter for many aspects of care (Jensen, Resnik and Haddad, 2008). For pressure ulcer prevention, the completion

of a scoring tool may give the RN a snapshot view of a point in time for a specific set of prescribed risk factors. This may be useful, but it does not support the RN in examining the context of the score and how it might vary at different points in the day or based on a patients fluctuating mood. NICE (2014) identify the challenges that one-off assessment might have if it is not repeated when a patient's condition changes. If the assessments are not contemporaneous and take account of the patient's holistic situation, then the resulting clinical decisions are likely to be less clinically sound. Aven (2016) has highlighted the importance of risk assessment instruments in relation to time dynamics. They need to be able to reflect the uncertainty of complex situations or be more adaptable to capture the changing situation and context as it happens.

Johnsen, Slettebø and Fossum (2016), in a think-aloud study, examined how RNs utilised their knowledge to inform the decisions they made. The study, despite being a small sample of 8 and concentrating on the home care setting, highlighted some important challenges for nursing practice. Within the study, it was highlighted that generally clinical decisions were reactive. In pressure ulcer prevention, this may lead to preventative interventions being delivered after tissue damage is already present.

Despite Johnsen, Slettebø and Fossum (2016) noting the complexity of decision making strategies used and the variety of both deductive and inductive approaches to clinical reasoning, nurse awareness of some of the holistic components of care was lacking due to over-thinking. The data collected in this thesis mirrors some of those concerns as RNs report having too much to do to be able to concentrate. Care delivery is more complex than in previous years and requires them to have more cognitive space for clinical reasoning that they do not feel they have. The ideal process that RNs should follow (figure 4.3) and the one that arises from the practice that participants in this study report (figure 4.4), illustrates a complex practice that RNs feel subject to rather than have control over.

> "*you don't always get to don't always get to it [pressure ulcer risk assessment] because you don't always have the time to do it [B3]*"

It is openly admitted that RNs overlook certain aspects of care as a result of this.

> "*Cos things get missed…"* **[C2]**

However, perhaps the problem is not workload directly but the way workload is approached, from a cognitive perspective.

Signal detection theory (Green and Swets, 1966) seems to apply to the reality experienced by the nurses in this study. RNs describe feeling overwhelmed due to the context of their practice:

> "…*because were always short staffed*" **[B3]**

> "*some days if you're short staffed and the acuity is high and just for whatever reason really busy, sadly you just have days where you just get through*" **[D2]**

> "*I've worked downstairs and the skill mix was awful…"* **[C2]**

Greig, Higham and Nobre (2014) describes inattentional blindness as a cognitive process of editing the world around us. Inattentional blindness allows an individual to dismiss the unexpected as an anomaly in a subconscious cognitive process (Simons and Chabris, 1999). RNs might not expect a person to be at risk of pressure ulceration because of an overriding assumption about health, for example younger patients tend to be healthier. Even in the presence of high morbidity risk factors (e.g. paralysis, diabetes, cachexia), they may become blind to the impact of these risk factors because it is unexpected within their mental model of pressure ulcer risk.

Kreitz et al. (2016) failed to illustrate any difference between expert and novice when it came to the ability to notice unexpected objects in a lab study. Pammer et al. (2018) suggested that expert drivers did not detect low level safety risks though they did detect more moderate level safety risks than novices. This might suggest a better ability to prioritise but might also suggest overfamiliarity with the presence of low risk factors and the reinforcement of the availability heuristic. Liao and Chiang (2016) illustrated that in 90% of cases, during an experiment to identify changing hazards within an environment, that those hazards were not detected before they would result in harm. Inattentional blindness is thought to be one of the most difficult cognitive biases to overcome due to the level of subconscious processing involved. Grissinger (2012) suggests that to overcome this bias, instead the environment or procedure needs to be addressed in order to increase the prominence of information or decrease the number of distractions competing for cognitive processing space.

The Yerkes-Dodson law (Coleman, 2009) suggests that at very high and very low states of arousal where a nurse may experience a lot of cognitive noise or very little cognitive stimulation, inattentional blindness may be exacerbated. This leaves a 'sweet-spot'

whereby moderate levels of workplace 'busy-ness' and a medium level of experience may improve overall risk detection outcomes.

It is also evident that following consideration of the role of mental models in section 5.1, that attitudes and situational awareness discussed in the literature review (pg. 19-20) will further impact the ability of RNs to reliably perceive and act on risk cues. As a result, it is important to consider alternative methods of risk assessment that are less reliant on the abilities of each individual RN. Clarity given by guidance and clinical pathways, prompts translated from best practice literature into local policy, could be one way of addressing this need.

When nurses interviewed described making choices about risk and risk prevention, rarely did they rely on the existence of guidance and some cited the need to step outside of the available guidance in the best interests of the patient. There was acknowledgement that this came with experience, however experience varies and so there is further potential here for inconsistency.

> "*it's having that confidence to say, not sure that I agree with that, but not everyone's going to have that*" **[D3]**

> *"Are you making the right decision? It's the same with Waterlow, should you give them a mattress shouldn't they? Its experience isn't it and confidence"* **[C1]**

Mahé et al. (2016) highlighted a wide range of factors that influence guideline adherence, some of which are related to practical aspects of care delivery and others resulting from cognitive biases and decision-making processes. Nurses reported using heuristic approaches as a way of achieving quick decisions in practice. They report taking cognitive shortcuts that eliminate the formal processes prescribed, based on their own experiences. Although heuristics are considered as a potentially sound method of decision-making, they are open to the influence of a range of cognitive biases that might result in inappropriate action and failures to mitigate risks adequately. Crosskery and Nimmo (2011) have considered the way that nurses form heuristic approaches and these are based on the cognitive biases of each individual nurse. Whilst each nurse may make a sound judgement, it could be different to the next nurse and this increase in variability across a system could lead to inappropriate variation, as described by Carter (2016). This could ultimately result in an increase in risk level for an individual patient or for all patients.

> "*Cos things get missed and that's not just with trained staff, that's non-qualified staff and physios, OT's and all of that sort of stuff…*" **[C2]**

The organisational pressures that are described by nurses in theme 3, such as intensity of workload, acuity of patients, staffing availability and skill level, all seemed to affect the RN's ability to cope with the expectation to make an assessment of risk and come up with a suitable plan. Risk perception has the potential for subjectivity influenced by things outside the direct control of the RN. If the nurse is unable to perceive the whole situation and is subject to the types of biases identified in chapter 2.2 (e.g. signal detection, situational awareness and attitude), strategies based on improving the performance of an individual, in relation to risk assessment, are unlikely to make a significant impact. Instead, an approach that addresses the human factors issues, the aggregation of numerous small errors, lapses and organisational gaps, is necessary to ensure that the individual RN is not overwhelmed by being solely responsible for keeping patients safe.

The RN's do not seem to apply a consistent mechanism for the assessment of risk and the plan that results from their judgements about risk. Indeed, some nurses are leaving both of these components of nursing care to HCAs (pg. 85-88). This behaviour could be explained by behavioural decision theory (Slovic, Fischhoff and Lichtenstein, 1984). RNs have to be aware of the broader context of the healthcare environment in which they work. They are responsible for multiple patients, often responsible for organising operational data to assist with patient flow and coordinating the delivery of interventions by multiple healthcare professionals. Given the complexity here, RNs are required to make decisions based on a wide variety of cognitive inputs. In contrast, the theory of planned behaviour acknowledges the intent of nurses to do their best for the patient.

"*If somebody gets a pressure ulcer, you've done an awful job as a nurse"* **[B2]**

"*I don't want my actions as a nurse you know to impact a patient like that"* **[A5]**

Ajzen and Fishbein (2005) describe the complexity of the environment and the attitudes of individuals (affected by education, culture and perceived norms) as key influencers on the decisions people make. Taking both of these theoretical approaches in tandem, there may be an explanation as to why nurses choose to act in a way contrary to best practice. If the RN does not want a patient to come to harm, we might assume that they would do everything possible to prevent a pressure ulcer. However, they may see the completion of a risk assessment tool or the delivery of particular mitigating interventions as less necessary than other aspects of care (e.g. management of blood pressure), or less urgent than the needs of other patients (e.g. the patient needing intravenous antibiotics now), colleagues or demands from the organisation. The RN is operating in a complex arena in

which they undertake analysis, not only of the individual patients but a whole host of other activities that require prioritisation of their cognitive space and available time.

Ultimately, regardless of intent, RNs have to make a choice regarding what they prioritise and how they act. Eisden, Sollid and Aven (2009) describe the decision-making process as being fundamentally a process of analysis. In relation to risk for an individual patient, the decision maker is required to be aware of factors that relate to their own capabilities, the organisational context and the risk factors pertinent to the patient's condition. Their study made an attempt to take 'front-line' risk analysis for individual patients and scale it up to an organisational level. However, this failed to acknowledge the nuances of the individual practice environment at distinct times. It also could not account for the variability of individual patients and staff factors or the way those individuals form relationships. Eisden, Sollid and Aven (2009) does acknowledge that total risk quantification is probably unhelpful and in order to make individual decision-makers more confident in undertaking rapid analysis of a situation and delivering appropriate interventions, additional training is necessary. That training needs to include risk analysis and not just the condition in question.

From the interviews undertaken in this study and in this authors experience, training is limited, nursing staff do not get robust education about risk and have very little training in tissue viability and pressure ulcer prevention.

> *"Your nurse training isn't great to be honest… I don't think at any point other than on placement was I taught about pressure area care"* **[D2]**

> *"I think sometimes we don't understand what the risks are"* **[C1]**

> *"They just say this is your Waterlow, this is what you use to assess pressure area risk and that's it basically. They might go through everything individually but do they actually teach them to look at the patients?" [C2]*

> *"Lack of knowledge about tissue viability. What I call 'going into sheep mode'. Not actually looking at someone from their own point of view, thinking why is this person like this"* **[B2]**

It becomes difficult to make decisions that are based on sound clinical judgement if those judgements are not formed from an effective knowledge base. In the literature review, education was highlighted a number of times as impacting on risk reduction activities.

Moore and Price (2004) noted that education might play a role in how people form an opinion. Manchia, et al. (2017) describe educations importance in understanding the context of the clinical judgement that is formed. Education level is also considered in relation to human factors, for example, Reason (1995) discusses the importance of ensuring that those undertaking a role have the appropriate education for the task. McCluskey and Lovarini (2005) studied the impact of an educational programme on 114 Occupational Therapists. While consistently levels of knowledge were improved and maintained at an eight month follow-up, the level behaviour change was significantly poorer. 6% of participants pre-workshop engaged in reading healthcare research, this only increased to 18% after the workshop. It is important to acknowledge that training and education alone are unlikely to produce significant changes in practice if they are not associated with structures and processes that allow new knowledge to be effectively implemented.

Padula et al. (2015) studied the impact of a range of interventions on pressure ulcer prevention. Of all interventions assessed, 5 demonstrated meaningful reductions in pressure ulcer incidence: leadership initiatives, visual tools, pressure ulcer staging, improved skin care, and improved patient nutrition. What is unclear from the study is whether the visual tools and pressure ulcer staging improvements really helped to reduce the number of pressure ulcers or just improve the accuracy of reporting mechanisms. The study measured success by examining reductions in only the two deepest categories of pressure ulcers. The improved accuracy may actually mean that the number of pressure ulcers has not reduced but more were of a superficial category than in previously assessed. What is useful from this study is the emphasis on multi-faceted improvements to practice that include, but are not reliant on, nurse education. Indeed, the importance placed on leadership fits closely with the discussion on role model use earlier in this chapter.

RNs are required to make decisions frequently throughout their working day, some simple and some complex (Bucknall, 2000). Lack of education and experience are thought to reduce the reliability of those decisions. But organisational factors leading to RNs being overworked, may be more important. Cognitive overload, the bombardment of large amounts of information in a high stress environment (Gluyas, 2017), is reported by RNs in relation to pressure ulcer prevention. They report that they don't have the time to spend on risk prevention because of competing priorities.

> "*We get a lot of pressure from the surgeons to get patients ready… time pressure is huge"* **[C2]**

"*So we're having all these things thrown at us and I do think that there's less time to do them*" **[D2]**

A myriad of factors external to the RNs direct control leaves the RN with a fatalistic view, in a position of defeat. The RN almost expects that pressure ulcer prevention (among other things) will be overlooked because of competing priorities, many of those priorities over-emphasised at an organisational level. Gluyas (2017) highlights the need to acknowledge the multi-facetted nature of the healthcare environment and develop strategies that help to address the factors that precipitate cognitive overload and lead to their escalation. Poor communication, ineffective documentation, chaotic organisation of systems and processes are all factors that are cited by Gluyas (2017), identified by Reason (1995) in relation to human factors and also by the subjects of this study as being problematic. Human factors, the biases involved and variability that results is clearly a risk for the reliable assessment of risk and delivery of risk mitigation. Risk assessment tools and similar checklists are one method employed heavily in a wide range of industries, including but not restricted to healthcare.

RNs in this study from each clinical area levied concern over the reliance on risk assessment tools, partly because of challenges in completing them in a timely manner and partly because of their failures to meet the needs of the RN. At the same time there were concerns over reduced reliability and increased variability if risk assessment tools were withdrawn. A discussion of the literature associated with pressure ulcer risk assessment instruments (section 2.3), illustrated a range of studies that demonstrated varied levels of validity and reliability of such instruments. One key concern highlighted from this review was the patient and environmental context of the studies available. With the vast majority of literature relating to critical care populations, the reality of practice for the participants in this study is not reflected. Patient ratios, skill mix of staff and the physical environment are very different. Therefore, the realities experienced by RNs in this study do not seem to align well with the literature about risk assessment tool use. In fact, study participants were open about their failures in relation to many steps of the assessment and care delivery process (figure 4.4).

Furthermore, there is no literature that accounts for the role that unregistered nurses play in this process. As a result, there is no specific consideration of how the HCA is able to support improvement or how they may contribute to potential increases in error. They are an important part of the team and will contribute to any human factors successes or

failures. The RNs interviewed frequently cited their importance as team members and their role as a safety net when the RN is unavailable but acknowledge the potential for them to contribute to increased pressure ulcer risk of they don't practice to an adequate standard.

> *"We can't do everything and when we're stuck behind a curtain, we have to rely on our HCAs, we take it for granted and hope that the person we're on with can take the slack"* **[A3]**

> *" So in assessing the patient, if the HCA felt that they were marking or, you know sustaining some form of pressure, the expectation would be that it would then be reported to the nurse that's looking after that... it's a mixed bag, you get some HCAs who are capable and some who are not"* **[B2]**

> *"The NA's are doing the vast majority of the washing dressing, rolling, moving of patients and so it's essential that they know how to do things properly"* **[B3]**

The concerns about HCA knowledge, critical thinking skill and contextual knowledge application raised by the RNs is significant if they are to be taking over these roles. Risk assessment, as highlighted throughout this thesis is not simply a task to be undertaken but is instead a complex series of considerations that should lead to a set of mitigating actions based on either protocol or judgement or a combination of the two. In acknowledging that HCAs are increasingly adopting these roles, they unwittingly contribute to another potential barrier for patient safety, as described by the swiss cheese model in figure 2.2, related to subjectivity and variation.

Alternative methods of risk prevention that acknowledge all of these human factors considerations is essential if practice is to be improved. Technological developments have brought the possibility of either automatizing the identification of risk or changing the way that risk is identified to one based more on physiological measurement than multi-focal risk factor identification. Borlawsky and Hripcsak (2007) described the automation of risk assessment using computer models to determine patient risk. Their particular study used machine learning algorithms to generate a novel model for pressure ulcer risk taking account of electronic data held about patients who had previously sustained pressure ulcers. It had a very poor predictive capability, failing to identify approximately 80% of patients who later developed pressure ulcers. The volume of data and the noise it generates was thought to be the primary reason why the system failed to generate useful outcomes. However, the concept should not be dismissed as machine learning improves

its capabilities over time and with further refinement, could produce more valuable outcomes. Butt et al. (2017) illustrates the development of computer aided risk assessment in environmental management of landfills though levies concern over their inability to generate holistic considerations due to limitations in their base model as prioritisation of concerns changes over time. When the systems are developed it can be difficult to fully know every important risk factor and how it interacts. Over time, this is costly and time consuming to rectify leaving such models at risk of becoming obsolete or at the very least less flexible than their human counterparts. There is perhaps a role of combining this type of model with the insight of professionals with more contextual information to inform their assessment of the total risk. This would require risk assessment training to focus less on the individual risk factors for pressure ulcer formation, as this can probably be automatized to some extent. Instead RNs should have a better understanding of risk concepts so that they can respond to environmental and contextual changes that raise the total risk within the workplace.

Brown and Zimlichman (2010) described a validation study for a continuous monitoring sensor that detected patient movement to determine which patients were at risk of pressure ulceration and which patients needed additional prompting or assistance to move. It also utilised visual and auditory nudges to alert the nurse to those patients most at risk. Compared with standard care prior to the trial of this product, there was a 75% reduction in pressure ulcer incidence. Nurses also reported a high level of satisfaction with the device. This work has been built upon in more recent years with new developments in thinner, more flexible sensors that can monitor both motion and the interface pressure between patient and mattress/chair. Siddiqui et al. (2013) demonstrated similar results in both incidence reduction and nurse satisfaction with a device that gave real-time interface pressure images to allow the repositioning that was undertaken to be done only when necessary and in an optimal way. This approach could reduce the impact of human factors in both decision making and care delivery by providing prompts and monitoring the effectiveness of the interventions delivered.

Other measures such as sub-epidermal moisture (SEM) measurement can be made using hand-held scanners that objectively identify differences in this physiological value. The scanners are used to detect small changes in fluid levels within the layers of the skin. These changes have been directly linked to the development of pressure ulcers. When evaluated regularly, early changes can ensure that those with increasing SEM can receive appropriate interventions to prevent ulceration (Bates-Jensen, McCreath and Patlan, 2017). Bates-Jensen, McCreath and Patlan (2017) studied 417 patients using the SEM

scanner to determine early skin changes associated with pressure ulceration compared with human visual assessment. 27% patients who subsequently developed pressure ulcers were correctly identified from physical examination compared to 41% using the scanning technology. O'Brien et al. (2018) in a smaller study of 47 patients, illustrated 100% sensitivity and 83% specificity of the tool, much better outcomes than identified by Bates-Jensen, McCreath and Patlan (2017). Furthermore, O'Brien et al. (2018) were able to demonstrate that the tool identified developing tissue damage an average of 4 days earlier than the nurse using their own clinical assessment and judgement skills. Gefen and Gershon (2018) demonstrated similar results comparing SEM with established ultrasound methods of skin assessment and demonstrated SEM as a more effective tool for identifying early damage that could allow for interventions to be more effectively targeted. Other examples from organisations have also illustrated significant reductions in pressure ulcer incidence (Smith, 2016; Lester, 2018)

Clendenin et al. (2015) has illustrated the ease with which individuals can be trained to use the device and interpret reading. This could mean that other members of the healthcare team, such as healthcare assistants, could easily take on this risk assessment role, reducing the workload on the RN. While potentially more objective, the SEM scanner may take as long, if not longer to deploy that traditional risk assessment scales, so without changes to practice that support the delivery of this assessment tool, the RNs from this study may still have levied concern over time-pressures. There are no studies that quantify the amount of time required for training to use the tool or in how long it takes to assess a group of patients.

Different ways of working have to be examined if the impact of human factors on decision-making and risk mitigation are to be understood and improved upon. Better structuring of workload within the care environment, use of technology to alleviate the burden of assessment or replace traditional assessment scales completely in place of entirely different approaches to determining who is at risk of developing a pressure ulcer in a reliable way should be considered if higher levels of reliability in pressure ulcer prevention are to be achieved.

5.3 Autonomy in professional practice and the impact of role

Despite the idea that high-reliability approaches to care reduce the overall risk within a system, RNs levy concerns about autonomy and the freedom to make choices in the moment that produce best outcomes for a specific patient.

"*Well sometimes the patient doesn't fit the protocol. For example all our patients are diabetic; they're not all high risk*" **[D1]**

Participants have recanted their experiences of knowing what the policy says but choosing not to adhere, overinflating risk scores and making rationalisations for equipment use despite practice guidelines.

"*If I disagree with it… I wanted a mattress for somebody because they were really frail, they didn't sort of come up to the 22 odd that you need so I thought stuff it and I actually increased the Waterlow by various means by popping stuff in, because it was more appropriate for that person at that time. You get a little bit where it's, not a jobs worth, but where your experience can actually override sometimes these things. Maybe I shouldn't have done, I think I actually told (TVCNS) that I'd done it, but, I don't care*" **[B2]**

A multitude of reasons are given for nurses exercising this autonomy. Unexpected events occur, like patient admissions and transfers, patient deterioration, staff redeployment and sickness, which are outside the control of any individual RN. In the current paradigm of risk assessment, the instruments available to RNs don't account for the impact of risks external to the individual patient. They make choices about what to do and when to do it, in the context of the chaos they perceive. When choices are made, such as the type of mattress they want for their patient, or the frequency of repositioning they recommend, the RN can exert a small amount of control over their situation in order to generate balance in their workload and priorities. However, even in exerting this control, they remain powerless as they are required to rely on others to deliver a significant amount of this care, or have faith that the equipment they want will be available.

"*we have to use our band 2 and 3's (HCAs) because we can't do everything"* **[A3]**

"And you're also covering yourself legally cos if something did happen and you were insufficiently staffed, you would be asked what did you do about it. If you couldn't source a pressure cushion or source a mattress, what did you do about it?" **[D3]**

It appears that control over practice is being eroded from multiple sources. One source of erosion would seem to be linked to the culture of risk aversion that has developed within the NHS and the way this is affected by the complex layers of management in a large organisation (Ruston, 2006). Weyman et al. (2006) undertook interviews with employees within a train operating company to examine how organisational dynamics affected the

culture of safety. An interesting finding was the individuals' feelings of loss of control to make decisions that they thought would improve safe outcomes. There was a sense that the level of control the organisation had over risk and safety was, perhaps, dogmatic. This is relatable to the findings of this pressure ulcer prevention study. Emphasis is being placed on managing systems and measuring outputs rather than actually delivering nursing care.

> "*the culture of the hierarchy impacting on the nursing and me as a Matron, probably 3 times a day I'm saying you've not done your MUST, you've not done your Waterlow so they're having to come to the computer to do that, that's an anomaly cause they're doing it there [at the desk] and the patients over there*" **[D1]**

It is possible that RNs see themselves as being slaves to process and losing a degree of professional autonomy, being called away from the bedside to manage their part of the healthcare machine (Bach, Kessler and Heron, 2008). Hyde and Exworthy (2016) suggests that more control is being moved from the front-line. Manager remote to the people and processes, removed from the reality of practice are making decisions that hamper the ability of front line staff to act.

Another source of erosion of control arises from changes in the dynamics of the interdisciplinary team. Stewart (2001) suggests that control and the role of control in domination, may be one of the most significant barriers to collaborative working relationships. The perception that control and power have been lost over a situation might cause counterproductive behaviours that limit an individuals' ability to share and delegate. Weyman et al. (2006) also found that collaborative working was negatively affected by those remote from a situation trying to exert control over practice. The cohesive and cooperative working relationships and emphasis on safety advocated by management, failed to translate to practice as each individual tried to protect their own autonomy. A study by Salhani and Coulter (2009) describes the way that RNs coordinate the care environment and exert control over the environment and everything that occurs within it. When the circumstances of the workplace dictate that professional control is impossible to exert, political alliances and interprofessional relationships are necessary to ensure that professional autonomy is optimised in an environment that control cannot be achieved. The response to a more challenging practice environment with increasing levels of bureaucracy placed on RNs reported in this study seems to be the transfer of some traditional RN activities to unregistered nursing staff. Some participants felt uneasy about this.

"*And actually, it's probably more and more a HCA role, the day to day, unfortunately that's the way it is, and things like peoples skin integrity is probably something that the auxiliaries have more to do with than the qualified nurses. That's a shame"* **[C2]**

Others were prepared to accept this new status quo if training and policies were in place to support this new way of working.

"*training the auxiliaries and the HCA's to be the experts in skin care and things has been a brilliant, because we do rely on them a lot more than we have done before*" **[A3]**

"*I think as long as the band 2s and 3's have enough training and are given enough knowledge… they're going to be taking over all that personal care we just need to make sure we're training them"* **[D3]**

The monopoly on labour market activities described by Miller (1967), where each profession has a clear boundary, is less apparent in the descriptions by the RNs interviewed for this study. Indeed, the clear lines within an interdisciplinary team seem to be disintegrating (Hoskins, 2012). HCAs are taking on roles traditionally seen as the remit of an RN, while RNs are taking on more traditionally medical roles (Bach, Kessler and Heron, 2008).

"*I think the nursing role's changed in the 4 years that I've been nursing, yeah. So I don't know how these nurses that have been working for 20 or 30 years must feel. I think the role has changed loads… I think band 2's are becoming more like Registered Nurses and Registered Nurses are almost crossing over into doctor land now*" **[D2]**

In the case of pressure ulcer prevention, the official (and so formal) assessment of risk should be undertaken by the RN who would then plan the patients care. Activities should be directed and tasks clearly delegated if they are to be given to another team member to fulfil (NMC, 2015). In reality, a more informal situation exists whereby some of the unregistered nursing staff will automatically undertake certain tasks and activities.

"*…we rely on our band 2 and band 3 nurses don't we*" **[A3]**

"*…because you can't be everywhere at once…*" **[A4]**

"…they (HCAs) don't sit there waiting for me to tell them and that he's been lying on a hard mattress, hasn't been turned for 3 hours, hasn't had any lunch hasn't had this and hasn't had that. Been incontinent and have nobody do anything about it. That wouldn't happen because they do it. So I don't need to formulate a plan because largely they've already done it, they know, up comes the patient, they look at him and they action it" **[D3]**

The unregistered nurses here are perceived to want more responsibility, the RNs for the most part seem content to allow them to extend their scope. As these roles continue to evolve, with RNs taking responsibility for activities from other professional groups, there may be a natural movement of responsibility for pressure ulcer prevention into the current group of subordinate roles. Figure 4.3.3 and 4.3.4 illustrate this evolution in process. Whether this is an active choice by the organisation, or specific delegation by RNs on a case-by-case basis is unclear. The reliance on the HCA described above seems to be the result of circumstance. The shortage of staff, pressures on time and acuity of patients all increase the RN workload and throughout the results chapter, these issues are cited as being responsible for numerous concerns about pressure ulcer prevention. Despite being context driven, the reality appears to be that power and control over the delivery of this fundamental aspect of nursing care has been or is being devolved. HCAs are substituting RN roles in order to ensure that more complex interventions are being delivered by RNs (e.g. intravenous drugs).

This transition of roles has been explained by Nancarrow and Borthwick (2005) in terms of substitution (figure 5.4). They describe horizontal substitution as the movement of job roles across workers of a similar status. In the context of the NHS, this might be unregistered nurses and physiotherapy technicians sharing similar jobs roles in different practice areas because it makes sense for them to undertake joint roles. In figure 5.4, these would both be paraprofessionals and have relatively low autonomy and less regulation than those higher in the pyramid. Vertical substation in contrast is the movement of job roles up and down on a hierarchy of skill, knowledge or status. An example of this occurs as some surgical consultants (Specialists) release the responsibility for minor procedures to nurse practitioners (Professionals). It is also the transfer of responsibility for pressure ulcer prevention that we see anecdotally in practice from RN (Professional) to unregistered nurse (Paraprofessional). With less regulation over unregistered nurses and lower levels of training, the question is raised as to the safety of this devolution of responsibility for an aspect of patient safety that causes such potential for morbidity.

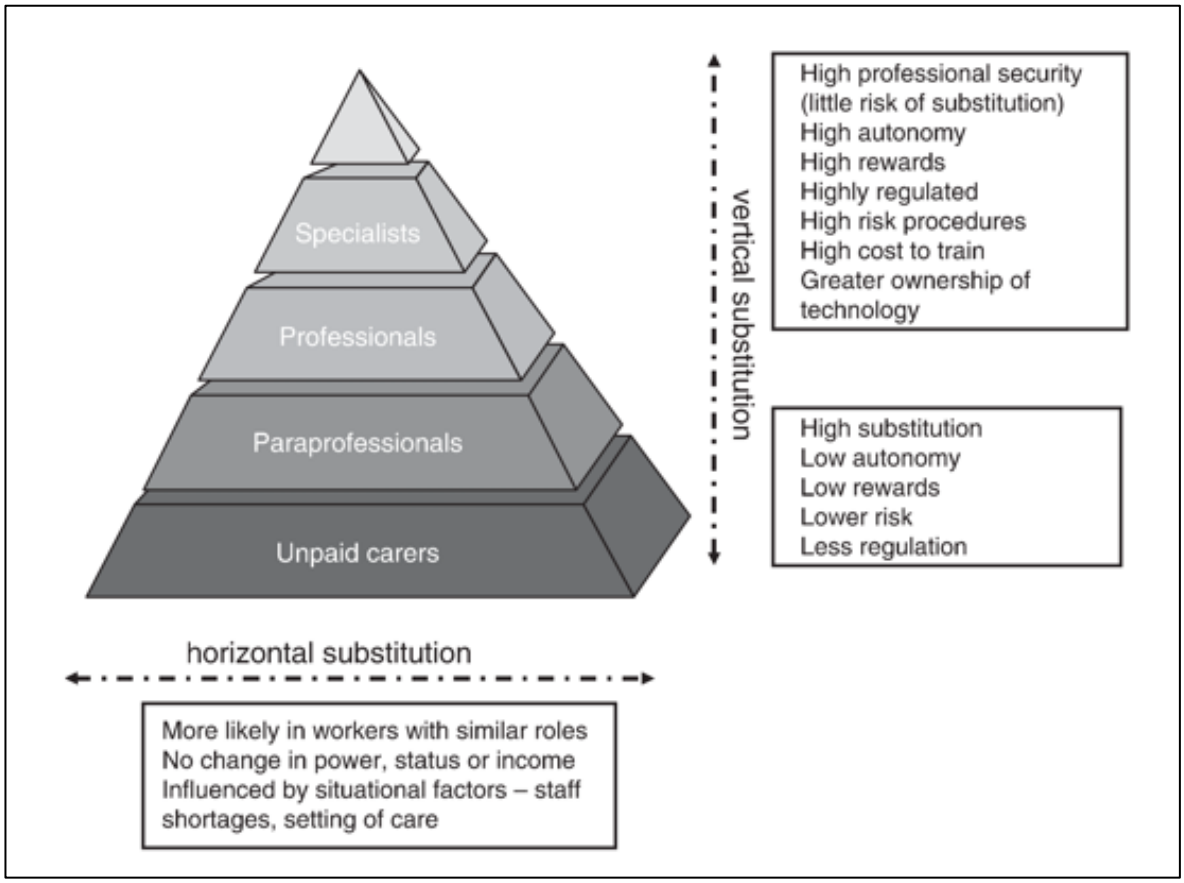

Figure 5.4: The influence of vertical and horizontal substitution (Nancarrow and Borthwick, 2005)

Brady et al. (2015) describe some significant concerns regarding the phenomenon of role/task substitution in healthcare. A total of 978 enquiries made to the nursing regulator between 2001 and 2013 in Ireland were considered queries or concerns related to scope of practice. Brady et al. (2015) undertook a thematic analysis on the content of the calls. There were particular concerns about the role of unregistered nursing staff and their competence to undertake roles traditionally the remit of an RN (i.e. medication administration) and the extent to which the RN remained responsible for the activity that someone under their charge was undertaking. Much of the change and evolution in nursing roles is affected by drivers external to the profession according to the authors. Expectations of medical staff, the employer and practical requirements based on changing practices due to innovation are all cited as issues that are changing the nurses' role. While this study only examined regulatory enquiries, it provides some insight into the concerns regarding role transition. Although the study is based in Ireland, the challenges and changes being faced by their healthcare system is not unique and can be seen within the NHS.

Webster et al. (2012) also described tensions that exist when new roles are introduced. Although they are discussing medical staff, the impact on those professionals lower in rank is of key concern and parallels can be drawn between the tensions that exist between RN and HCA. A total of 12 members of the interprofessional team including medical, nursing and therapy staff were interviewed. Almost unanimously there was support for the new role that was introduced, however, there were some issues that resulted from lack of clarity in role boundaries, expectations of task delivery and responsibility for patient outcomes. What is apparent from this study is that while a substitution of role, or task, may be welcomed in principle, the importance of collaboration cannot be overstated. Caution is also levied with regards the unintended new work that can arise from changes to professional working practices and the transfer of responsibility from one role to another, particularly where roles and their boundaries are unclear.

Åhsberg and Carlsson (2014) tackle role substitution between RN and HCA more specifically in the palliative care setting. A total of 7 unregistered nursing staff participated in a series of 3 focus groups to explore their perceptions about practice in terms of their role in psychosocial/spiritual care for patients nearing the end of life. The reason that this staff group were being examined was their proximity to the patient due to their time being predominantly associated with personal care. The study found that this staff group were heavily focussed on giving the patient a positive experience, yet felt they lacked the time and resources to do the best job possible. They wanted to spend time helping to support patients in both physical and existential care components but felt powerless to do their best at times because of work pressures. Dwyer et al. (2009) have described similar concerns across all of nursing and the impact that not having sufficient resources has on patient dignity. While role substitution is often seen as the way to improve efficiency and outcomes, eventually there becomes no-one more junior to transfer activities to and the study by Åhsberg and Carlsson (2014) illustrates the frustration that the HCA might feel as they are allocated more and more tasks with fewer staffing resources. In pressure ulcer prevention, we can observe the same problems, as HCA’s responsibilities have moved beyond personal care and they are increasingly taking on extended skills such as phlebotomy, ward based investigations, administration and even oversight of groups of patients in the hospital setting while RNs are called away from the clinical area for case conferences, managerial tasks etc. (Bach, Kessler and Heron, 2008). Abbott (1988) highlights that tensions that can arise when occupational jurisdiction is unclear and how both the subordinate and senior professional can feel out of control when roles and expectations become more malleable.

Bach, Kessler and Heron (2008) studied this phenomenon in more detail, interviewing 34 HCAs and 26 RNs to understand how these individuals described their roles in relation to operational policies/procedures, job descriptions and national papers describing these roles and their relationship to patient care. HCA's demonstrated the kind of tacit knowledge and observational skill that is not acknowledged as part of their role. Role substitution was acknowledged rather than role support with HCAs undertaking the majority of direct care activities. There was variation among RNs as to what they felt comfortable with HCAs doing and HCAs illustrated variability in what was expected and allowed. This leads to confusion and with rising numbers of HCAs in the workplace, RNs may have felt out of control as the proportion of RNs fall.

More recently, there has been greater focus in literature about multi-professional working and collaboration. Orchard (2010) suggests that a service based approach is shifting to encompass more patient centred outcomes as the target of healthcare and with that a more collaborative paradigm. Kraft, Blomberg and Hedman (2014) utilised semi-structured interviews to gather the experiences of occupational therapists, physiotherapists and RNs to better understand the way that collaboration worked in practice. The study highlighted that for true collaborative working there was a need to cross professional boundaries whilst at the same time maintaining one's own identity. They also described the importance of knowledge transfer between professional groups. Finally there was acknowledgement of the tensions that exist when competing factors are not compatible, in particular, regulatory, organisational policies and daily routines that existed. Some of these factors were deemed more important at certain times than others and the participants identified the need for strong communication channels to avoid misunderstanding, occupational superiority and power plays that might negatively influence patient care. While this is just one study, similar tensions arose in the study conducted by O'Neill and Cowman (2008) who examined the way that RNs interacted with the multi-professional team in a primary care setting. In both studies, unregistered healthcare staff and physicians were not involved. There are no studies identified that encompass the views of the most senior to the most junior healthcare team member and across all professional groups. In pressure ulcer prevention, while there are many professionals involved, it is predominantly nursing staff (registered and unregistered) who are responsible for ensuring that patients remain free of pressure ulcers and in the UK, they act largely autonomously in this goal. While guidance exists in relation to pressure ulcer prevention and the need for a multi-professional approach, it is unclear whether this is truly achieved.

During the interviews, questions about safety of vertical substitution and role change became evident when RNs remarked on the capabilities of HCA's **if** they had received appropriate training and supervision. With no national standard for what that training must entail, or standards of practice by which competence can be measured, it becomes difficult to determine what the appropriate training is, for a given scope of practice (Wakefield et al., 2009). However, what seems important is that RNs, in the current context, have the authority to make decisions that allow for safe and effective prioritisation of 'sick' patients without prejudice towards their attitudes to pressure ulcer risk. Utilising the rest of the healthcare team, particularly unregistered nursing staff may help alleviate many of the problems associated with risk management if appropriate levels of education are achieved for those taking on new roles and they have the tools and support systems to ensure they deliver safe and effective outcomes.

5.4 Summary

The ability of each individual RN to make an objectively accurate assessment of risk and make appropriate choices about how to mitigate risk is called into question. Literature points to an unclear picture about whether an assessment tool or clinical judgement is a superior method of risk assessment, however in order to achieve reliable and standardised assessments, tools are probably more help than hindrance. The nurses in this study seem to have different views on that matter with some favouring tools and others favouring the freedom to assess in their own way. There is no doubt that RNs possess high levels of knowledge and clinical acumen as a professional group, but the knowledge and experience each individual has, in addition to the context in which they practice, affects their cognitive processing for better or worse. The availability of training and type of training available to RNs, the practices they witness and the role models they encounter all help to establish their mental model of what is 'good' practice. The patients they encounter and the frequency with which they see pressure ulcers, alongside how readily this is accepted by their colleagues and the organisation also informs the mental model. However, it is also important to acknowledge that RNs are not the only staff group who have an intimate relationship with pressure ulcer risk management. The HCA, increasingly responsible for undertaking aspects of risk assessment and associated decision-making, also need to be included in considerations about how mental models form and how they can be manipulated to improve outcomes.

Even with a well-developed sense of what constitutes risk and an effective strategy for determining risk, the delivery of such a programme of risk reduction is in part dependent

on factors external to the individual nurse. As multiple factors, such as workload, patient acuity and the stresses placed upon individuals and the working environment take hold, the chances that individuals will fail to adequately recognise and act on risk signals increases. These human factors, largely unexamined in pressure ulcer prevention, are likely to play a larger part in the failures that participants in this study spoke about. Increasingly feeling a loss of control over the ability to prevent pressure ulcers in their patients, many of the nurses interviewed feel powerless to do the job they feel they should to the best of their ability.

Finally, the way that healthcare organisations are responding to challenges of workload and patient acuity in the evolution of roles needs to be considered when it comes to patient safety. In the same way that many RNs feel powerless to do their best, they have relinquished responsibility for much of the practice of pressure ulcer prevention without any formal mechanism to ensure those other members of the team are performing adequately. There is no structured training or clarity in policy with regards responsibility and accountability for this activity. However, junior members of the healthcare team, without adequate training, supervision and support are being expected to ‘take the slack’ when RNs can’t achieve what is expected of them in their roles. Role substitution seems to have happened by default rather than as a result of a well-considered and planned process of change.

6. Conclusion and Recommendations

In considering the literature review and the results of this study, a discussion has centred around the way that individual RNs form an opinion about risk in general and more specifically in relation to pressure ulcer prevention. It has also considered the effect of human factors and the changing practice landscape on the way that RNs make decisions about risk and action risk mitigation interventions; most notably the evolution of unregistered nursing roles and their acquisition of responsibility for pressure ulcer risk assessment and prevention. This chapter will consider the limitations of the study and how the findings can be utilised to inform practice-based change and guide future research within this field.

6.1 Study Limitations

This study has utilised recognised methodological procedures as detailed in chapter 3 and applied them in the context of the research aim, however, there are limitations to be considered.

6.1.1 Generalisability

This is a subject often levied as a concern for individual small-scale studies whether using quantitative or qualitative methodologies (Winter, 2000; Charmaz, 2006). In this instance, the choice of a qualitative approach is consistent with the research aim and the specific use of a phenomenological methodology was employed to develop a sense of how specific groups of individuals viewed this particular area of nursing practice.

Saturation is generally considered to be the point at which qualitative studies can safely cease data collection and draw conclusions about the subject (Smith and Osborne, 2008). Morse (1994) suggests minimum of 6 participants would normally be necessary to achieve this, while Creswell and Poth (2017) recommends a range of between 5 and 25, depending upon the population sampled and the breadth of the phenomenon being examined. In contrast, Giorgi (1985) suggests that a phenomenological study may be able to demonstrate an understanding of the phenomenon in question using just 1 participant. The flexibility in participant numbers illustrates the scope that phenomenological studies can cater to.

This current study utilised a sample of 14 individuals (combined from a focus group of 5 RNs and 9 individual interviews) to generate both individual interpretations of the practice of pressure ulcer prevention and a collective understanding. The focus group (Group A) was conducted first followed by individuals working in healthcare of the elderly (group B),

by the 2nd interview, it became apparent that there were no significantly different experiences of practice being demonstrated. The same frustrations, the same motivations and very similar challenges were being identified. Similar experiences, thoughts and feelings were being discussed by each individual, though some provided more emotional and some more objective and rational presentations of these views. The only important difference from all 4 areas of practice was in group C, planned surgical admissions. The context of practice here is dramatically different to all other areas and while they faced different challenges, the concerns about practice being levied were broadly the same as all other groups.

This study specifically focussed on the care delivered in a single acute hospital environment. The number of participants is also relatively small and as became apparent during the interviews, did not capture other roles within the healthcare team delivering risk assessment for pressure ulcer prevention. This makes it difficult to draw conclusions about nursing practice on a larger scale because it is not able to make assertions about how other organisations deal with risk assessment, or mitigation in pressure ulcer prevention. Also, as patient care is increasingly delivered in smaller community units, care homes and patients' own homes, the experiences of staff in these other practice settings have not been considered. This limitation in the scope of the study does affect generalizability to other practice settings and other organisations.

The choice of sample participant was also a key consideration. In this instance, 4 different clinical areas of varying levels of patient acuity and 3 different levels of RN providing direct care, were chosen in order to capture a breadth of experience of seniority and practice context. Although more senior staff had some different perceptions than more junior staff and articulated their challenges differently, across all levels of seniority, there was consistency in their experience. A key limitation to the sample chosen became apparent very early in the study as participants described how much of the direct care delivery and immediate decision making was being undertaken by unregistered nursing staff. This results in a group of staff not being included in this study who are more closely integrated into the assessment of risk and decision making that was previously understood.

6.1.2 Trustworthiness

The concept of trustworthiness is an interpretative judgment made by the reader of the literature in question (Rolfe, 2006). Steps have been taken to ensure that this study is viewed as trustworthy. Although the study has been delivered in a transparent way ensuring that the methodology could be repeated, the nature of phenomenological studies

means that the reader must trust the interpretations made by the researcher and the narrative that is presented as a result of the data collection and analysis. Giorgi (2000) highlights that in phenomenological studies if replicability is possible because the method has been clearly outlined, then the interpretations made by the researcher should accepted. It is the researcher that is most closely embedded in the data and most able to make an effective analysis of the data due to their proximity with both the raw data and the context of the research. This is a limitation in this study as there was only 1 researcher involved in the collection of data and its analysis. This may have introduced an element of interpretive bias. Furthermore, the researcher was known to all participants in a senior clinical role. This may have introduced further bias both in participants agreeing to be involved in the study and in some of the responses given. It was noted though that participants felt comfortable being honest as they regularly prefaced their responses with phrases like

'*I know you won't want to hear this…*' or '*it's not what the policy says, but…*'

Quotations and themes were reviewed by a professor of nursing with significant qualitative research experience and tissue viability nurse with significant experience of pressure ulcer prevention practice. Discussions were had regarding the words and the context within which they were said and the researchers own interpretations. Both have confirmed the findings of the study and agreed the validity of the findings. The interpretative nature of phenomenological research means that some of the things that were said by participants were said in such a way that the interpretation in the moment may have been different to the interpretations following reflection of the researcher on the whole of the encounter. This might have affected the overall interpretation of what was said by participants and influenced the thematic coding.

A further potential source of bias arises from the selective nature of the sampling method chosen. The rationale for the purposive sampling method has been discussed in the methodology chapter. While the aim of this method was to try to ensure that there was a representative sample across the populations being studied, it is possible that selection of individuals for participation by the researcher may have resulted in a subconscious bias. It may have been more appropriate to provide inclusion and exclusion criteria to a third party and ask for them to identify the subjects to be approached.

6.2 Recommendations for Practice

Nurses are challenged by the current model of risk assessment and risk reduction in pressure ulcer care. There are over 90 different validated tools in use globally, all

designed to alert the RN to risk and prevent patients from getting pressure ulcers (Moore and Cowman, 2014). However, despite the body of knowledge about specific risk assessment instruments and care delivery, patients still get pressure ulcers. Risk assessment in its current form is not straightforward, this is further complicated by the fact that RNs are not the only group undertaking this role. Instead, HCAs are the subject of role creep and are increasingly required to fulfil the risk assessment, decision-making and care planning roles. If this is the reality going forward, we need to consider the approach we take to prevent patients from developing pressure ulcers.

In order to improve practice in this field, clinical practice leaders must work together with their teams to clearly define the roles that exists, the functions those roles should fulfil, the training required and the way in which those functions are delivered. It is essential that this occurs as a collective activity that allows the cultural components associated with pressure ulcer risk reduction to be assimilated from different sources into a common approach that is evidence-based. Pressure ulcer risk assessment and prevention practices need to be harmonised to ensure safe, effective and efficient care is delivered reliably.

To achieve this there are 2 key recommendations that should be considered for practice:

1. We must rethink the way we do pressure ulcer risk assessment. RNs need to establish a more contemporary mental model of risk that is based on best evidence. Nudges should be used to facilitate this mental model adjustment on both an individual and cultural basis. This will result in a cultural approach to pressure ulcer risk assessment that aligns all those involved in a risk assessment paradigm that is more suited to contemporary nursing practice in a contemporary healthcare economy.
2. Unregistered nursing staff and evolving roles within the healthcare team are undertaking risk assessment; they must be included in the design of systems and must receive the same education as RNs to determine which patient is at risk of developing a pressure ulcer and how to prevent it in each case.

6.3 Future Research

In order to make these practice-based changes, further research is required in a number of areas to better understand what changes are most likely to provide significant benefit. This includes consideration of both the risk assessment paradigm and the way in which changes can be operationalised given the complex context of healthcare roles and working practices.

An additional study following the same methodological principles but with a broader scope than was possible here may help to provide a more generalizable view of practice. A study that examined practice in other acute hospital organisations as well as different types of practice setting such as home nursing/social care and long-term residential care would be valuable. This would help to generate a better understanding of practice in those contexts and how similar or different the challenges and opportunities might be to the findings of this study.

Future studies should explore the role that unregistered nursing staff play in the assessment and mitigation of pressure ulcer risk. As nursing workforces in the UK evolve, roles are changing with activities traditionally undertaken by RN's are moving into the job descriptions of more clinically junior staff. Generating an understanding of how the unregistered nurse perceives risk and risk mitigation practices might help to provide direction in the way that these staff are trained, also how that training integrates with the expectations of the RN's supervising their practice.

An implementation study that compares the delivery of traditional risk assessment instruments alongside automated approaches and the use of physiological measures such as SEM scanners would help to grow the knowledge base and determine whether the routine use of such technologies reduces significantly the impact of human factors on risk related error and bias.

A series of quality improvement case studies should be completed to evaluate the impact of "nudges" that are ultimately used in practice in order to demonstrate both acceptability on a practical level and the impact they have.

6.4 Conclusions

Pressure ulcer prevention practices are complex, not because risk factors are unknown, and potential for harm is not understood. Rather, the complexity arises from the way that nurses perceive risk factors and the probability that their patient will develop a pressure ulcer. These complexities can be seen to come from a whole range of sources including a nurses' own mental model of risk influenced by: the practice they see, their memory of training, the value they perceive being placed on risk reduction, their own cognitive biases and perception of the practice context. The nurse is also subject to extrinsic pressures on their time, making it a challenge to deliver what they perceive to be best nursing practice. With increasing clinical and management workload for all RNs, their ability to deliver care

and adequately supervise appropriate delegated care to others is impaired. This leads to errors and oversights that nurses are concerned will result in harm yet feel powerless to effect change. This study has highlighted these factors and identified an individual's mental model of risk, the RNs autonomy in their role and the way that both intrinsic and extrinsic factors lead to difficulties in forming judgements and making decisions that can be practically enacted.

This study sought to explore nurses' perceptions of risk in the context of risk assessment for pressure ulcer reduction in adult hospital inpatients. It has been able to describe how nurses perceive risk and the factors that help them to form a personal judgement about patient risk for pressure ulcers. It has examined the way that nurses approach risk assessment and prevention and identified that the expected model is not necessarily followed. There are both social and technical barriers to good practice in this field. It is possible that the risk assessment paradigm, while sound in theory, does not adequately address key risk factors and guide nurses to make good decisions about care. Instead, more direct physiological measurement of the tissues that are at risk of damage might provide a more reliably operationalisable approach to determining who needs what care.

As RNs have increasingly been required to delegate this aspect of care to more junior staff and their role in this activity appears to be diminishing, the need to reconsider pressure ulcer risk assessment more radically than simply developing new, more valid scales, has become more necessary. Increased delegation of responsibility seems to be in part due to the impact of extrinsic factors such as time pressures caused by staffing issues and increasing clinical acuity, organisational priorities and evolving roles. These findings have raised some further questions about this aspect of practice. How can practices be streamlined in order to limit the cognitive biases of individual members of staff? How can risk interpretation skills and clinical judgement skills be improved for all those involved in pressure ulcer prevention? How will the changing landscape of acute hospital service delivery and the roles it requires change the way that pressure ulcer prevention will be delivered in the future?

What is clear is that RNs want to do a good job, they want to prevent pressure ulcers, they want to ensure their patients are safe and well-cared for and they know broadly how to do this. This study highlights some gaps in the way the nurses are able to achieve these goals, partly because they feel powerless to act and partly because they do not believe they have the time because competing priorities taking their attention. The problem they face is in operationalising their ideal mental model of risk. Clinical leaders in healthcare

need to examine this further to ensure that best practice is not only promoted but is also made possible in the environment and in the mind of the nurse.

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Appendix 1 – Focus Group / Interview Guide

- Introduction by moderator
    - Welcome to this focus group and thank you for participation
    - Introduce topic and overview of focus group schedule
    - Confidentiality agreement
    - Offer to leave at any point
    - Offer of follow up discussion as an individual if participants would like to discuss anything further than has arisen as a result of this activity
- Opening question
    - What does risk assessment mean to you?
- Introductory questions
    - What methods of assessment do you use to decide whether a patient is at risk of pressure ulcer development?
    - What do you think affects how well you are able to use these methods?
- Nominal group activity / Individual listing exercise – risk assessment criteria
    - Make a list of all of the patient characteristics that you see as risk factors for pressure ulcer development.
    - As a group, agree on a set of risk factors and place them in order of priority with number one being the most important.
- Transitional questions
    - What is it about each risk factor that makes a patients risk level increase or decrease?
- Key questions
    - Do risk assessment tools positively affect patient outcomes?
    - How useful are risk assessment tools compared with clinical judgment?
    - What affects your assessment of risk?
    - How effectively do you think you are able to estimate risk of pressure ulcer development?
    - What affects your ability to estimate risk?
- Nominal group activity / Individual listing exercise – risk mitigation
    - Make a list of the things you can do to mitigate patient.
    - As a group, agree on a top 10 aspects of patient care and place them in order of impact with number one having the most effect.
- Key questions
    - How do you know what needs to be done for patients at risk?

    - What affects your ability to make those decisions?
    - What affects your ability to implement the patient care you chose?
- Moderator summary
- Clarify overall responses based on discussion
- Summary question
    - Is there anything that anyone would like to add?
- Closing question
    - What are your thoughts about risk assessment for pressure ulcer prevention?
- Moderator closing
    - Thank you for participation
    - Reminder about confidentiality and post activity support

Appendix 2 – Participant Information Sheet and Consent Form

Department of Health, University of Bath & Royal Devon and Exeter NHS Foundation Trust

INFORMED CONSENT FORM FOR RESEARCH PARTICIPANTS

This form is intended to provide an overview of the research in which you are considering becoming a participant. It will ask your consent for a series of requirements for the study to be effective. If you require further information about the study before providing consent, please contact:
Mike Ellis, Tissue Viability Clinical Nurse Specialist
01392 402846
michael.ellis2@nhs.net.

Information Sheet

Purpose of the Study. As part of the requirements for the Professional Doctorate in Health at the University of Bath, I have to carry out a research study. The study is concerned with the perceptions of registered nurses with regard the risk assessment and risk limitation for pressure ulcer development in practice. It will try to explain this aspect of nursing practice in order to better understand how nurses can be supported to make objective assessments of risk in order to improve future patient care.

What will the study involve? The study will involve participation in a 2 hour (approximate) focus group activity with colleagues from within your clinical area. The focus group will involve discussion and participation in risk assessment related activities. The focus group will be audio-recorded and notes taken by a second individual involved in the study.

Why have you been asked to take part? You have been asked because you are working in an identified clinical setting and deemed generally suitable to provide useful information and participate in this research.

Do you have to take part? No. Participation in this research is entirely voluntary. If you choose to participate, you are asked to sign the attached consent form (both copies) and retain both the information sheet and a copy of the consent form for your own records. You have the option to withdraw your participation at any point prior to the commencement of the study. You may also ask to have your information discounted from the study up to 2 weeks after your data has been collected. Should you choose to withdraw from the study, any data that you have provided will be destroyed.

Will your participation in the study be kept confidential? Yes. Your name or any specific identifying features will not be used in any work published that contains information collected from you or about you. Any extracts from your participation, including quotes, used in the thesis or any other published work, will remain entirely anonymous. Participants in the study will be required to agree to maintain confidentiality regarding any points discussed as part of this research activity. The only time that confidentiality may be breached is if it is deemed to be legally necessary in order to disclose criminal behavior or behavior which may require professional misconduct proceedings to be initiated.

What will happen to the information which you give? Any data resulting from your participation in the study will be kept confidential from third parties, including your colleagues and employers. On completion of the thesis, all original data, including transcripts and other products arising directly from the focus group will be destroyed after 12 months.

What will happen to the results? The results will be presented in the thesis. They will be seen by my supervisory team and the external examiner. The thesis will be published as a stand alone piece of work. Parts of the thesis or condensed versions may be published in journals ad other scholarly sources. Reports of the original data may be used in subsequent research and analysis.

What are the possible disadvantages of taking part? I don't foresee any negative consequences for you in taking part. You will be sharing information about your perceptions of nursing practice and your approach to practice with other nursing colleagues. This may cause you to feel some anxiety, though by signing the consent form, participants agree to maintain confidentiality for all points discussed during the focus group.

What if there is a problem? At the end of the focus group, I will offer each individual the opportunity to discuss any concerns that may have arisen as part of the activity in private. If you should feel afterwards that you would like to discuss any concerns or speak to an impartial individual, clinical supervision can be arranged by contacting myself using the details above or Renelda Zanetti, study administrator (01392 402773 or renelda.zanetti@nhs.net).

Who has reviewed this study? Approval for this study has been given by the University of Bath research ethics committee and the Royal Devon and Exeter NHS Foundation Trust research ethics committee. The study has been assessed for its ability to meet the requirements of a Professional Doctorate in Health by my research supervision team from the University of Bath.

Any further queries? If you need any further information, you can contact me on the details at the top of this information sheet.

If you agree to take part in the study, please sign both copies of the attached consent form and return 1 copy to:
Tissue Viability
Stewart Smith House
Royal Devon and Exeter NHS Foundation Trust
Barrack Road
Exeter

Appendix 3 – Participant Information Sheet and Consent Form

Consent Form (Participant Copy)

I……agree to participate in the pressure ulcer risk assessment research study conducted by Michael Ellis.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my contributions to the focus group for this study to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be destroyed.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

□ I agree to participate in the study of risk assessment described in the attached information sheet (reference: PURA2014a) and have confidential details from my contribution included in publication.

□ I do not agree to participate in the study of risk assessment described in the attached information sheet (reference: PURA2014a).

Signed…… Date…….

Consent Form (Researcher Copy)

I……agree to participate in the pressure ulcer risk assessment research study conducted by Michael Ellis.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my contributions to the focus group for this study to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be destroyed.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

□ I agree to participate in the study of risk assessment described in the attached information sheet (reference: PURA2014a) and have confidential details from my contribution included in publication.

□ I do not agree to participate in the study of risk assessment described in the attached information sheet (reference: PURA2014a).

Signed…… Date……

Appendix 4 – Ethical Approval University of Bath

Dear Mike,

Full title of study: Evaluating the perceptions about and the use of risk assessment in pressure ulcer prevention among nurses REACH reference number: EP 13/14 45

The Research Ethics Approval Committee for Health (REACH) reviewed the above application at its meeting held on 15th January 2014.

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion of the above research on the basis described in the application form and supporting documentation. The committee requested that you thoroughly check the information sheet and consent documents for typos. Please inform REACH about any substantial amendments made to the study if they have ethical implications.

Kind Regards

Rachael Yates
Department Co-ordinator

Appendix 5 – Ethical Approval Royal Devon and Exeter NHS Foundation Trust

Royal Devon and Exeter NHS
NHS Foundation Trust

Mr Mike Ellis
Tissue Viability Clinical Nurse Specialist
Royal Devon and Exeter NHS Foundation Trust
Barrack Road
Exeter
EX2 5DW

Royal Devon and Exeter Hospital (Wonford)
Barrack Road
Exeter
EX2 5DW

Tel: 01392 411611

GENERAL MANAGEMENT
Direct dial: 01392 406933
Direct Fax: 01392 403012
Email: rde-tr.Research@nhs.net
Ref: CB/R&D/CG

10 February 2014

Dear Mike

Study Title: **Evaluating the perceptions about and use of risk assessment in pressure ulcer prevention among nurses**

R&D Ref: **1411001** **MREC Ref:N/A**

I have reviewed the Trust R&D file for your study and I note that this study does not require ethics approval. I am happy to give approval on behalf of the Trust.

Research Governance

The Director of Research & Development has asked me to remind you of your responsibilities as an NHS researcher, which are:

1. Work must be carried out in line with the new Research Governance Framework for Health and Social Services, which details the responsibilities for everyone involved in research.
2. The Data Protection Act 1998 requires you to follow the eight principles of 'good information handling'.
3. For studies involving human tissue, you are required to ensure that your research is fully compliant with The Human Tissue Act 2004 and the EU Tissue and Cells Directive implemented on 07 April 2006.
4. As an employee of the Trust you must be aware of, and comply with, the Trust's Health & Safety polices.

More information about all these responsibilities can be obtained from the Research & Development Office, Royal Exeter and Devon Foundation Trust, 3rd Floor Noy Scott House, Barrack Road, Exeter EX2 5DW

With best wishes for a successful study

Yours sincerely

Martin Cooper
Medical Director

Cc R&D Study File
Enc: Approved documents

Trust approval no ethics required V1.1 09/05/2013

Chairman: James Brent *Chief Executive:* Angela Pedder OBE

WZK856

Appendix 6 – Ethical Approval University of Bath: Deviation

Dear Mike,

Title: How do nurses perceive risk for pressure ulcer development in adult inpatients in the acute hospital setting?

I can confirm your updated REACH application was considered by the Chairman of the REACH Committee on the 7th May 2014. On behalf of the Committee, I am pleased to confirm a favourable ethical opinion of the above research on the basis described in your supporting documentation. Please inform REACH about any further substantial amendments made to the study if they have ethical implications.

Kind regards

Rachael

Rachael Yates
Department Co-ordinator
Department for Health
University of Bath
Bath BA2 7AY
Tel: +44 (0) 1225 383461
Email: r.m.yates@bath.ac.uk

Appendix 7 – Ethical Approval RD&E: Deviation

Hi Mike

We discussed your protocol deviation request at the local research meeting yesterday and are happy for you to make the changes. Can you send me a copy of the new version with a version number (v2) and date included. This is important in order to demonstrate an audit trail and to ensure we're all working from the most recently approved documentation. Once I have a copy I'll send you a confirmatory email.

Best wishes
Lynda

Lynda Garcia
Non-Network, Local Research Co-ordinator
Research & Development Royal Devon & Exeter NHS Foundation Trust Room 418, 3rd Floor, Noy Scott House Barrack Road Exeter EX2 5DW